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Textile World

AUGUST 1940

NEW YORK
ATLANTA

No. 8

BOSTON
GREENVILLE

A McGRAW-HILL PUBLICATION

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TEXTILE WORLD (formerly *Textile World Journal*) with which are combined *Textiles*, *Posselt's Textile Journal* and *Textile Advance News*. Published monthly. United States and Possessions, Canada and Latin American Republics, $1.50 per year; all other countries, $2, U. S. currency or 12 shillings. Single copy 25c. Annual index appears in "Textile World Yearbook & Catalog."

Of this issue, 13,770 copies were printed

Member of Audit Bureau of Circulations
Member of Associated Business Papers, Inc.

Contents copyrighted, 1940
by McGraw-Hill Publishing Co., Inc.

McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York, N. Y.

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Steel—FIRST LINE OF NATIONAL DEFENSE

Steel is essentially a peacetime industry—and America's normal appetite for steel is great.

This is fortunate for all of us.

It permits steel producers to carry on year after year and to find employment for hundreds of thousands of men.

It makes management extend itself to remain competitive—to improve its production facilities—to better the quality of its old products—through research, to devise new products—in order to win in the battle for markets that goes on apace in all industry.

Republic has done exactly that and—in the emergency now facing America—is in a position to supply more and better steel—the first line of any nation's defense.

Republic has invested millions of dollars in plants, in equipment, in research and in the training of men. Republic has expanded its ore supplies—enlarged its blast furnaces—increased open hearth and electric furnace capacity—built new mills and added new finishing equipment. But more, Republic has built an organization of men who know steel.

And now, seeing but dimly through the haze that clouds all business prophecy, but realizing our own deep responsibility, Republic, vital to peacetime prosperity, pledges its every effort to help keep America the way we know it and love it—to keep America safe for Americans—through steel, first line of national defense.
Republic Steel Corporation, Cleveland, O.

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TEXTILE WORLD

DOUGLAS G. WOOLF, Editor

A Plea for the Mopper-Uppers

WHEN WE GET ALL THROUGH the shouting, somebody must do the job. When the last columnist—whether it be Walter Lippman or Dorothy Thompson—has had his or her pontifical say, somebody must mop up. And the mopping-up job seems to fall into the lap of industry.

The things that are needed are not rolling "r's" but airplanes and tanks and textiles and munitions. And, so far as we are aware, there is no important manufacture of these articles of war in the District of Columbia. Except poison gas, of course, and that doesn't seem to be playing much of a part in the present war.

So, as we said, the finger points at industry.

It points, to a considerable extent, at the textile industry.

What should Mr. Textile Manufacturer do about it?

We pointed the way, in broad terms, on this page last month. Modernization, coordination, sanity in production programs.

But, specifically, there is more to the job than that.

There is an industrial-relations job.

Executives run back and forth to and from Washington. They learn what it is all about.

But what of the men in the mill? The superintendents, assistant superintendents, overseers, second hands, technicians, master mechanics—and all the other individuals who make up the line forces of the textile industry.

They are the mopper-uppers. On *them* falls the job of producing materials for national defense.

How many textile manufacturing companies have called their operating executives into conference—gotten their intelligent support—and turned over this defense job to them, where it belongs?

We know a few who have. Infinitely many more haven't.

Now is the time, of all times, to recognize that those operating executives are the key to the whole problem.

Editors may preach; executives may go to Washington; but the overseers in Roanoke Rapids or New Bedford or Greenville or Lawrence—and thousands of others—must deliver.

First, get them keyed up to the job the industry faces. Second, be sure that they—all of them—are getting a commensurate return for their effort.

No investment is more worth while than that which will insure a whole-hearted support from the key-men down the line. They *want* to help, but they must be told *how* they can help—and they must be paid adequately for their help.

And they must be schooled to pass on to the man at the machine the knowledge of what this present emergency means to them—not only in the production of textiles for military use, but in terms of their contribution to the last defense of freedom in the world.

Never in our memory—not even in the First World War or in the great depression—was there a more important industrial-relations job to be done.

The only real criticism we can make against the textile industry—which we know and love so well—is that its handling of the real personnel problem, that involving relations with the key operating men, has been too casual, mostly inadequate, and often bungling.

In many plants this defect can be overcome by the executives themselves. We know many manufacturers who need no outside help in this problem. They can supply all the knowledge and inspiration needed—if only they will. In other plants, trained industrial-relations experts will have to be engaged.

This fact is important: Industrial relations is not just a personnel function. It is not merely a question of hiring and firing and safety and village maintenance. It is a fundamental problem of developing morale, industry consciousness, and a psychology which relates the work of the individual to national needs. If that sounds abstract, it is only because industrial relations is essentially an abstraction. It is certainly not a science—at least as yet. It calls for character and knowledge and, above all, sincerity, in the men and women who administer it.

Sincerity! More wrongs have been perpetrated in industrial relations by insincere gestures than by any other attitude. Stuffed shirts try hocus-pocus—often unconsciously, but it is still hocus-pocus. The average worker is not a dumbbell. In fact, he is just an American citizen, with a free man's ability to reject what he doesn't believe. He may pretend to take it, for political reasons, but underneath he *knows*.

Sloppy direction of employer-employee relations is one of the greatest industrial menaces to national defense. Conversely, intelligent development of a concerted effort throughout a plant, from president down to sweeper, is one of the greatest contributions any company can make in our present national emergency.

Many of our friends have asked us what a textile manufacturer can do to help save America for democracy. This is our answer.

Douglas G. Woolf

THE EDITOR SAYS

Hold High the Torch!

There is a tendency toward defeatism among our people today. It is not surprising. What has happened in the last year is still too unbelievable to permit a renaissance of hope.

The world din of nations collapsing before the might of greedy men, of long-tested and fought-for principles of freedom and self-determination yielding to the ruthless creed of totalitarianism, of millions of people bereft of homes and families and livelihood and even of sustenance—all this and more destroys long-established senses of values, and leaves the average individual without even the make-shift crutch of a new sense of values.

The spectacle of Great Britain, the last defender of the faith in the Old World, engaged in a death-struggle with the forces of hate and destruction, is too awful to permit this country, tied to that nation by so many bonds, to act and think clearly.

And yet we must.

First, it is our responsibility to lend all aid to Great Britain promptly, effectively and completely—all aid short of intervention in war—which we possibly can. Red tape must be cut, legislative obstacles eliminated. That is our first national job.

Second, we must orient ourselves to the new implications of world affairs. We must be prepared for their devastating effects upon our national economy. We must adjust ourselves to possible shrinkage, of an unknown percentage, in our standards of living. We must be ready to spend and spend—but always wisely—to protect this country and this hemisphere as the second line of defense of freedom.

More than all that, however, we must defeat defeatism. Many of our readers have experienced the First World War, the Great Depression, and now the World Collapse. They, and the younger generation, must be prepared to experience the unknown adventures of the next two decades, and more.

We do not recommend a spirit of adventure, insofar as war is concerned. But we *do* recommend a spirit of resilience in tackling the problems ahead.

There is compensation. Great men and women, great heroism, great self-denial, have been created out of the travail, in this country, of the American Revolution, the War Between the States, the First World War, the depression. We did not seek any of those crises—but we and our forefathers met them and conquered them.

We shall meet what lies ahead in the same unconquerable spirit. But the time to start is now—before defeatism gets a hold.

Out of the present world collapse there will eventually come a rebirth of freedom and of all the ideals which men of all nationalities have espoused, occasionally falteringly but eventually consistently, over the centuries. Those values will not be lost, but they will have to be fought for.

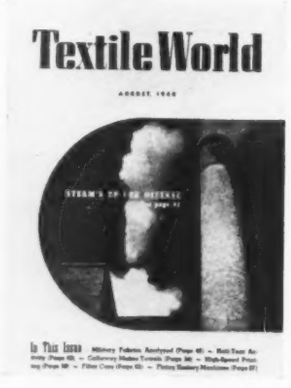
Speaking personally, our only regret is that those of our generation may not live to see this outcome. But we can at least make sure that those of the new generation get from us the conviction of undefeatable courage. Then, they will carry the torch which generations af Americans have passed to us.

39 Years of Service

Every alumnus of the Philadelphia Textile School knows the contribution Bradley C. Algeo has made as president of the Alumni Association. He declined this year to stand for reelection, and thus ends 39 years of such service. There remains, however, the permanent imprint of a strong character and remarkable personality.

The testimonial banquet which the Alumni Association will tender Mr. Algeo on Oct. 11 will give the alumni and other friends of the school an opportunity to express their appreciation.

Remember the date and place: Friday, Oct. 11, 1940, Penn Athletic Club, Rittenhouse Square, Philadelphia.



Steam's up! Mill whistles call more men to work as textile industry takes on its share of military business for defense needs. Detailed story starts on page 42

Don't Toy With It!

German industrialists took Naziism as a way out. Look at them now—either serfs of the state, or in exile.

Any American industrialist who thinks he can save his shirt by playing with Fascistic groups, whether of domestic or foreign origin, should hold his breath, cross his fingers, count ten, and then go back to the business of running his company.

There is no more hope in Fascism than there is in Communism. There is hope, only, in Americanism.

If in doubt, ask Thyssen; he knows.

Speechless Speakers

The world is making progress after all. Not so long ago the National Council of American Importers staged a banquet that wasn't eaten. Over 300 "phantom" diners paid $3 a "plate"—the entire sum going into a fund to pay the expenses of National Foreign Trade Week.

The millenium will have been reached when an association arranges a program of speeches that aren't given. That will be worth $3 of any man's money.

One Gangster to Another

News Item: Hitler presented Mussolini with a 16-gun armored train and expressed the wish that it "may accompany you in the future on your voyages to protect your life, which is so precious to the Italian people and the German nation."

Oh, precious, precious thought!

Why-Bring-That-Up? Department

News Item: Six Germans in Berlin were sentenced to three years in prison and loss of civil rights, for listening to foreign radio stations. "In Germany every one listens only to the German word," said the official news agency, D. N. B. "The love of truth of the German news policy is recognized throughout the world."

Quite.

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Finds "Information File" Useful

Editor, TEXTILE WORLD;

I am and have been a subscriber to TEXTILE WORLD for over ten years and have found it both instructive and helpful. The article by Glenn H. Alberga, "Information File," which was in your July issue was sure an up-to-date and timely article.

In these days of new and improved processes and fibers, it is hard to keep abreast of the times. The only possible way is to subscribe to, read, and hold for reference literature dealing with the line one is interested in, and to build up a file and index whereby the articles previously read may again be consulted.

This does entail some time and possibly an outlay of money to get the system organized and a responsible man to keep it running and up to date, but it is by all means an asset, and will more than pay for itself in a short time.

I have on hand all the issues of TEXTILE WORLD for the last ten years, and all the material is indexed so that I can refer to and find almost any article on textile manufacture within a few minutes.

I would not be exaggerating if I told you that in all I have between 14,000 to 16,000 articles on index. My index is worked into possible 28 sections, alphabetically arranged — analysis, bleaching, cloths, costs, designing, dyeing, finishing, hosiery, knitting, looms and loomfixing, lubrication, maintenance, mildew, printing, rayon, spun rayon, research, rubber and elastic yarns, scouring, silks, size and slashing, soaps and softeners, specifications, spinning, stains and streaks, testing, warps and warping, waste, weaving, weaving defects, wool, yarns, yarn manufacture, etc.

This outline covers the major part of the index; the minor sections include many articles which are more or less specialties.

This has taken a lot of time and work, but I dare say there are few if any textile men who have gone into this system of filing as far and as consistently as I have, and it has enlightened me and given me much information which I would otherwise not have access to, as most of the articles are out of print now.

So I say again that the article "Information File" is tops and a practical thing.

CHARLES LUTZ
Philadelphia, Pa.

Back-Stage in Army Purchasing

A glimpse behind the scenes into general plans, and specific jobs and problems

McGRAW-HILL WASHINGTON BUREAU

PAUL WOOTON, Chief Correspondent
Blaine Stubblefield
Irvin D. Foos Carter Field
Robert Colborn M. G. Maury

By BLAINE STUBBLEFIELD

THE WAR DEPARTMENT'S clothing and equipage procurement is rolling along and the Defense Commission's textile and uniform advisory agencies are trying to make sure it will roll smoothly, even if rough going turns up ahead. There are three channels through which Army purchases are made: (1) the Procurement Division of the Treasury; (2) direct purchases by such departments as the Chief of Ordnance, the Signal Corps, the Air Corps, Engineers, Medical Corps, etc.; and (3) purchases through the Quartermaster General. The Quartermaster General's office comprises three major divisions: Construction, Transportation, and Supply. It is the Supply Division of QM that buys, among other things, all clothing and equipage for the Army. All of this purchasing comes under the authority of the Assistant Secretary of War.

QM is headed by Maj. Gen. E. B. Gregory. Under Gen. Gregory, Brig. Gen. C. L. Corbin is Chief of the Supply Division, and is responsible for the procurement, storage and issue of all supplies. In the Supply Division, Lt. Col. R. M. Littlejohn is Chief of the Clothing and Equipage Branch. Assistant to Col. Littlejohn is Maj. L. O. Grice, with other officers assisting him. Col. Littlejohn passes on specifications of blankets, cloth, uniforms, and soldiers' equipage, with the approval of Gens. Corbin and Gregory. This staff cooperates directly with the Quartermaster Depot staff at Philadelphia, 21st and Johnston Streets. The Philadelphia Depot is under the command of Col. W. A. McCain. The Jeffersonville, Ind., depot under command of Col. Drury K. Mitchell, handles all other equipage such as tents and webbing products.

In addition to its responsibility for procurement of uniforms and blankets, the Quartermaster Depot is charged also with storage of the same, against a time of need. One of the first things you find out, in reply to opening questions at the Depot, is that it has nothing in storage.

If any service of the Federal Government can justly alibi itself, that service is the procurement of Army textile supplies. Ever since 1919, the peaceful populace of this land has turned a deaf ear to pleas before Congress for such minor preparedness as the purchase and storage of cloth, uniforms, equipage.

Brig. Gen. C. L. Corbin, Chief of the Supply Division, Washington

For years the Quartermaster General, members of his staff, and members of Congress have urged the procurement of woolen cloth and blankets against a time of emergency. Such requests were made at the bottom of the depression, when orders would have been welcome at cost to turn the wheels of mills and keep body and corporate-soul together. The answer was always "No." Had we not fought a war to end war?

Col. W. A. McCain, commanding the Philadelphia Quartermaster Depot, was one of those who went on record for laying in supplies. He, like most of his associates, offers no excuses, says that's the way this country operates, and gets busy. He says all it takes is time and money to clothe the Army. We've got the money but we're short on time and will have to make the best of it.

This is not to say that the Army faces any critical problem in textile supplies. There are some choke-points, but they can all be opened up. The one really critical commodity is time. The shortage of time is the main reason why a Textile Division has been set up in the National Defense Commission. It is the main reason why the Quartermaster agencies are being hurriedly expanded and acting with inevitable haste. The Government and the textile industry did a beautifully adequate job in 1917–18; it will do a better job this time; it will be a more efficient job than the last; but it might just as well have been nearly perfect, if it were not for our poky ways in matters of defense.

The hurried procurement program now faced by QM, in the opinion of some of its officers, brings on the threat of too many bright ideas. QM has what it believes is a proved procurement system. But there are always new-comers, at a time like this, in the Army, in Congress, in the Government. Their fresh viewpoints result in many improvements. But a few quick-fixit notions, they fear, might cause more trouble than they're worth. For instance, some officers wouldn't like to see regional depots spotted all over the map with power to purchase. If they were limited to storage and issue, that would be fine. They could speed up issue, and save transportation congestion.

Col. McBain, asked to comment on this point, said he personally would not have too much decentralization. "Real efficiency," he says, "would be found in

Col. W. A. McCain, Commanding Philadelphia Quartermaster Depot

TEXTILE INDUSTRY AIDS ARMY PURCHASING

A statement by Maj. Gen. Gregory, Quartermaster General of the Army, to the readers of TEXTILE WORLD

The efficiency, capacity and desire for cooperation within the American textile industries are the outstanding assurance of a successful effort of the Quartermaster Corps function of clothing the Army during a general mobilization and maintaining it during an emergency. The relationships between the Quartermaster Corps and the multitude of suppliers, fabric producing facilities, clothing manufacturing plants, sellers of materials, dyestuffs, chemicals, and a contributory host of other accessory houses, have been intimate, efficient and long-standing. The length of time of these collaborations during which producers have recommended or developed new or better textiles or complementary items, together with the Army's experience through trial and error over the years, has given a stability and quality to the many clothing and equipage items.

The basic principle of normal procurement has been to invite all interested bidders to furnish military requirements. This procedure has permitted any prospective contractor with suitable capacity to participate in Army contracts and has thereby contributed to the widespread dispersion of benefits in an equitable manner. The present specifications have been periodically revised and amended to lift items out of narrow producing limits to where more could share orders. Wherever possible, the clothing or equipage item itself has been contrived to employ a contributory textile that assisted in the maintenance of balance in industry.

A concrete example has been shown in the consideration given the Army, Navy and Marine Corps woolen and

Maj. Gen. E. B. Gregory, Quartermaster General of the Army

worsted fabric requirements. The woolen and worsted industry is divided approximately in half in the broad looms in place in woolen and worsted mills. The Navy and Marine Corps utilize woolen types of fabric constructions and the Army requires woolen overcoating and blankets. It is better planning to utilize worsted fabrics for Army coats, trousers, breeches and shirts made from either Bradford or French spun yarn, thus assisting in the maintenance of balance in the whole woolen industry. The specifications for cotton and woolen mixed underwear, a major knitted item of Army clothing, has been written to include several variations of merino yarn, available from different types of yarn plants in the woolen, worsted and cotton industries. Substitute specifications for important woven textiles have been authorized to increase available supplies.

The experience of the Quartermaster Corps with the diverse sections of the American textile and accessory industries has resulted in a high standard of textile performance on military contracts. The contracting and inspecting officers and personnel at the various depots have found the industry, in general, entirely willing to manufacture products according to specification, because they realize that the specifications are not an arbitrary control of production, but the cumulative experience of industry research and development work within the Army and the results of tests in the field under service conditions. In the present current procurement of large quantities of fabrics and clothing, emphasis must still be placed on performance, both as to the time limitations and the adherence to specifications governing manufacture. This office will require specification qualities in textiles as long as it is possible to acquire the necessary raw materials or the requisite facilities are available.

The Quartermaster Corps is confronted with a great emergency, the duration or scope of which no one can foresee. Large quantities of textiles are currently being procured and still large requirements are in immediate prospect. At this time the fortunate and able assistance of a Textile Advisory Commission to the Council of National Defense, composed of leaders of the American textile industry, is in close cooperation with the office of the Quartermaster General. A comprehensive study of the capacity of industry to produce under widely varying conditions has been completed by this office. With American ingenuity and determination at the helm of the textile industry, it can safely be predicted that needs of the great National Defense program will be filled.

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centralization of control, and decentralization of operations, commensurate with situations as they develop."

WHETHER QM OFFICERS have really anything to fear in future disruption of their system, they don't know. Meanwhile they are going ahead with their purchasing on an emergency scale. Orders were placed as noted in these columns last month, totaling $27,000,000 which included 4,382,500 yd. of melton overcoating, 30–32 oz.; 1,844,000 yd. of worsted shirting, 10½ oz.; 5,363,000 yd. serge; and 964,000 blankets. Announcement of imminent calls for bids on similar additional amounts of these goods proved to be in error.

As this was written, the QM was calling for bids, in some cases about to open bids, on garments to be made of cloth already purchased, as follows: 810,968 flannel shirts; 383,578 pairs 18 oz. serge trousers. Calls for bids on 500,000 blouses or coats and 75,000 mosquito bars will go out at some time not stated as this was written.

Some bids on goods involving additional production by textile mills were as follows: bids had been opened on 300,000 woolen gloves; just opening on 330,000 rain coats—made of rubberized lawn, hard to get; out on 700,000 canvas leggings; out on 1,490,000 pairs of cotton shorts; out on 1,500,000 cotton socks; out on 1,000,000 light wool socks; out on 300,000 pairs of knit drawers, half cotton half wool; out on 500,000 cotton undershirts; contemplated on 150,000 units of denim work suits; 50,000 to 75,000 units of cooks' white suits, pants and coats; out on 250,000 herringbone twill coverall suits, with probability of more soon; 1,000,000 yd. herringbone twill was awarded to J. P. Stevens; just opening on 2,400,000 yd. 8.2 oz. khaki. The makers supply the cloth for the rain coats, leggings, cotton shorts, cooks' suits, coveralls.

Commenting further on the bid program, purchasing officers said it could be taken for granted that since they are passing out much of the recently-acquired stocks to clothing contractors, large orders of cloth would soon replace them. This, they said, was a personal opinion, not official. The Quarter-

master has money available to clothe the Regular Army and the National Guard on a war footing, but it has no money for draft men. If Congress authorizes the draft, it will undoubtedly provide money for a commensurate clothing and equipage program.

In general, though there are exceptions, the Quartermaster buys and turns over to manufacturers, all cloth for outer clothing that is worn by men "on parade"—meaning on duty that requires good appearance. For all work and underclothing, manufacturers supply their own cloth. The difficulty in getting outer "parade" clothing is one of matching color. It is amazing, say procurement experts, what a wide range of colors are submitted, even by leading woolen manufacturers, in attempting to match a sample. Their ideas of OD may range all the way from chartreuse to brown. Soldiers wearing such chromatic cacophony in formation would look terrible. QM feels that it will always have to buy cloth on dress-up uniforms, even though it would like to get rid of the job. There is no advantage in it; cost of handling just about offsets any price gains in quantity purchasing.

Frequently mentioned in calls and orders is one of the most interesting new arrivals in the Army: herringbone twill. This is a good place to state what we found out about it. Orders for this twill started out under specifications for combed yarn for the warp. Tests were soon made of twills with the combed warp, and with carded yarn both ways. It was found that the latter served well enough.

BUT BACK OF THE NEWS of orders, there is many a story of research battles won and lost in the constant effort to keep up with and ahead of change in the art of defense. Uniform requirements change just as weapons change. In the Research and Development section of the Philadelphia QM Depot, one learns of recent and current projects, which are worth citing as matters of interest to manufacturers who deal, or expect to deal, with the Government.

One of them is the zipper jacket, or windbreaker. An old soldier suggested it, and Washington QM thought it was a good idea. It would be for field service only. QM went out and borrowed a lot of jackets on the market, to size them up. Made several of its own. These were submitted to the Uniform Board—an organization composed of representatives from all the services that wear uniforms. This Board adopted a tentative specification for tests. Now 15,000 are being made up. They will go to several branches that work in the field; 5,000 will go to Alaska. More reports will go to the Uniform Board. The Board will suggest changes, or it might throw out the whole project.

Another example of development problems was the slate blue uniform. It was desirable because (1) OD is "not a color"; dozens of shades are called OD; it's often out of control; (2) the boys wanted slate blue; they could wear the new suits for dress and pull the stripes off worn pants and use them for work; (3) it was found by tests that slate blue is less visible from the air than OD is; that was no small consideration because the enemy's eyes are in airplanes these days. The abandonment of the blue uniform would make a long story, but to cut it short: The Army had a tremendous quantity of OD, or tan, web equipment, such as belts, gun slings, bed roll straps. It would have cost a king's ransom to throw it away. It couldn't be sold. That is the main reason why the boys are not in blue.

J. C. Nichols, who has been appointed Director of Miscellaneous Equipment Division of the National Defense Commission. He is on Mr. Knudsen's staff and will aid in clearing bottlenecks in production of uniforms, tents, hats and other finished products in textiles. Mr. Nichols has been a member of the Business Advisory Council of the Dept. of Commerce since 1938, and is head of J. C. Nichols Co., Kansas City, Mo., an investment firm.

And there is no answer to the silk flag situation. The stars and stripes you see flying over Army posts, and some flag at the head of columns, are not silk; they are cotton or wool bunting. But the regimental colors are very heavy silk, hand embroidered, take a month to do, and cost around $200 apiece. The unfortunate thing is that the silk doesn't last; gets stiff and brittle in a year or two, even cracks. Apparently light causes the trouble, even electric light will do it. The part that goes bad first is the red area. What to do about the light and the red dye, no one knows. Nearly everywhere you run into silk in the service. They are planning to use synthetics instead.

A cotton blanket for the Army sounds like a good idea, especially to cotton Congressmen, the Department of Agriculture and others who would like to find some relief for the surplus of raw cotton. The Quartermaster does not appear to have been very enthusiastic about it, but recently tried it out. A cotton blanket was made up in test numbers and issued to CCC. The result was definitely disappointing.

One other project that ended in disappointment was the oiled balloon cloth raincoat. It looked like a great success until it was put in storage. Then it became sticky. The oil may have reverted from its cured (dried) condition to a glyceroid state. This happened whether the coats were packed, or merely hung up in closets. The only thing to do was go back to the regular rubberized coat, which is made of two plies of combed yarn lawn, with rubber between them. This is a good coat, but it's expensive and the lawn is not as available as Army would like it to be.

Asked if any outsiders had brought in valuable ideas, one officer took out a file and told us about bobbinet. It was found there are only some 65 machines operating in the country. These could not supply the expanding Army. The first obvious solution was marquisette or leno weave fabrics, commonly sold at low prices for mosquito netting. But the Army needs much more durable stuff. Marquisette is not safe, for men exposed to venomous mosquitoes, because the warp slips too readily along the filling and leaves openings. Various proposals were submitted by Nottingham and Levers lace manufacturers, Raschel warp knitters, and by tricot knitters. Although tricot is not as sturdy as Army standard bobbinet, it does not slip. Bids were opened recently on 750,000 sq. yd. Levers and Nottingham lace nets are not rejected but "circumstances" prevented orders being placed at this time.

Talk about special problems; there is Alaska. We would have a real clothing job on our hands if we had to do some big-league mobilizing there. The reindeer skin parka—hood over your head and down to your knees, with fur outside—is the ideal garment. But there's not enough reindeer skin. A substitute might be lamb skin. We could get a lot of that by taking it away from women who wear low-priced "fur" coats. But the substitute idea that interests textile men is a wool or hair plush, maybe a mixture of the two, treated to repel water.

Of course there are other problems the Army doesn't talk about. And some situations are all to the good. For in-

stance we have plenty of dyes. Manufacturers say they can produce everything needed. The Army always worries the dye men a bit because soldiers are outdoors two or three times as much as civilians and their clothes fade. Soldiers must look alike. Army calls for extreme fastness. You may not have noticed that the Army has *two* colors, now. In general, they are olive drab for wool; khaki or tan for cotton—except cotton lining for wool garments is OD.

That's about all, for one visit to Philadelphia, except one wouldn't want to leave the Depot without looking in on the factory.

Federal law says that the Quartermaster shall manufacture clothing "economically," but it does not say how much, as you may have been told. Any fixed percentage of the total Army supply would be impossible, because conceivably at low procurement tide the QM plant would nearly run out of anything to do, and in case of heavy mobilization it couldn't make a drop in the bucket. The Philadelphia plant was set up before the New Deal word "yardstick" was invented, but that's what it is. Best proof of that, we heard on Capitol Hill, is that people are always going to Washington with brief cases, trying to get it discontinued. This factory can fill in on small but essential needs when necessary. But perhaps its greatest service is first-hand experience for QM procurement men. Thus they are not in the position of amateurs who must let experts "tell" them.

There is no thought or intention of expanding the Philadelphia factory. It runs one shift, averages almost capacity. Its products are wool trousers and coats; cotton slacks and shirts. (Shirts, not coats, are worn with cotton slacks.) The shirt, to digress a moment, is smart looking, has shoulder straps, and is made of twill. It's setting a bit of a style pace in civies, and it is reported that questionable "Army twill" is being sold by sharpers. To go on, the plant is making some of the new mechanics' one-piece work suits, overcoats, green duck water-repellent "mackinaws"—a misnomer. It makes breeches too, for the cavalry. Floor space 160,000 sq. ft.; employees average 1800; about 1300 sewing machines.

BACK AT THE START, we said that the textile groups of the Defense Commission were trying to smooth a rough road for textile defense production. Just what they are doing and what their plans are, can only be pieced together from evidence gleaned here and there. Although Stettinius and Knudsen have seen fit to reveal some of the work of the Commission, the textile and garment agencies of the Commission feel that in some cases reports would not be in the public interest; in other cases they do not yet have comprehensive facts to present. Indeed they have not promised to make any reports at all.

Coverage of textiles and their products has been expanded recently within the Commission. Some reports have mistakenly represented the original Textile Division as lapping over from the Stettinius Industrial Materials Department into the Knudsen Product Department. This is not the case. The Textile Division remains as it was, in the materials group. But over in the Product Department, under Knudsen, Clyde J. Nichols has taken over the Division of Miscellaneous Equipment and this includes all the defense *products* of textiles, including knitted garments. Assisting Mr. Nichols are C. M. Woodard, and Raymond Reis, supervisor for clothing.

This is pretty accurately the program of the Nichols administration: (1) To keep the clothing purchases of various Government agencies from overlapping to such extent as to cause market dislocation. It might be good policy, for example, to stagger Army and Navy purchases of blankets or duck goods. Conceivably, too, Army might, if not advised, order practically the whole available supply of some goods, leaving none for the Navy. Such things happened in the World War. (2) To diffuse the orders geographically, so that all cutting and sewing regions will get their proportionate shares. They are all paying taxes on the defense program. (3) To see that such irregularities as seasonal production are leveled off or taken advantage of, as advisable.

Like the Textile Division, Miscellaneous procurement does not actually buy anything. Orders go through regular channels, but all those of importance come under advisory scrutiny. Officials may hold the orders, rush them, or split them, having in mind the objectives outlined above. This is not an official statement of Defense Commission plan or policy, but it came from an informed source.

Turning attention again to the Textile Division, persons who have had

The Philadelphia QM Depot has one of the finest textile testing laboratories in the country. The lab's chief duty is testing hundreds of cloths purchased by QM and by manufacturers of Army textiles. Here are tried out a constant flow of new ideas and developments, from the Army, from the industry, and from individuals. Many "new inventions" are old stuff to the experts. But the amount of gold recovered is worth panning the large volume of gravel. View at left shows a corner of a physical testing room kept at standard temperature and humidity. Among machines shown are: at right, an abrasion tester; center rear, a yarn winder; in the glass cabinet, a yarn tester. View at right shows equipment for chemical fabric analyses. At right are laundry machines for shrinking tests, and an extractor

close contact now express the opinion that the Division was set up, not because it is needed so much now, but because it can make studies now that will be highly useful later on if real mobilization comes. Getting organized for effective action is essential. The work the group is doing now will give it experience for more urgent tasks that may lie ahead.

That doesn't mean that the Division isn't busy—at important work. Some choke points have appeared, and the group has taken action that is effective now, or will be. But none of them has been considered serious.

There is, however, a wool problem, not as serious as it was in the World War, but bad enough to engage attention in high places. One angle is that the British have ordered Australian and South African wool sold through London. Why not sell it to us direct? If the Empire went down, vast changes might overtake the wool trade of the world. How would we come out? All these ifs and questions are being studied. Not one of them can be left open. Storage of foreign wool here for military use is being arranged.

There is a flax problem. Flax is important in making military harness of all kinds: belts, straps, parachute rigging. The Quartermaster officers state that the quantity of such goods is greater than is generally realized. The British, who largely control our flax import, have shut it off from this country, except for luxury uses at very high prices. The Division is said to be studying the possible expansion of domestic growing, as in Oregon, and new foreign sources, such as Argentina, which now produces flax for seed. Canada successfully increased its production.

There are problems in other things. Combed cotton yarn production is insufficient for a big draft mobilization, it is claimed by some in the Army. This is said to be partly because the Quartermaster is specifying combed yarn in more products, particularly in cotton underwear, both drawers and shirts. It has been found that these goods made of combed yarn are a bargain over carded yarn because they wear proportionately longer. Problems in lawn for rubberized raincoats, and in duck for tents and other goods, have already been mentioned.

In addition to these other coordinating functions, the President has appointed Donald M. Nelson, an executive of Sears, Roebuck & Co., and lately chairman of Textile Committee No. 1 under the Wage-Hour law, as coordinating agent of all Federal purchasing in the defense program. Mr. Nelson has appointed Frank M. Folsom, vice-president of Goldblatt Brothers, Chicago, to assist him in the coordination of textile and kindred lines.

Other Washington News

FOURTH "GUINEA PIG" CITY IN COTTON STAMP PLAN

With designation of Los Angeles as the fourth area, further extension of the cotton stamp program is not likely until late in the fall. Then it may be installed in a few additional cities for further testing. And finally, if results warrant it, Congress may be asked to make a substantial appropriation next spring with the idea of applying the program generally throughout the country. Aside from Los Angeles, other "guinea pig" cities for cotton stamps are Memphis, Minneapolis-St. Paul and Springfield, Mass. A second southern city may be added in the near future, but this is undecided.

RED CROSS COTTON PLAN DORMANT

The plan for the Government to donate 1,000,000 bales of raw cotton to the American Red Cross, to be exchanged by it for cotton goods and apparel needed by war refugees, is dormant, but not dead. When the international situation settles somewhat and the refugee relief problem clarifies, the plan may be incorporated in a Congressional resolution.

The method suggested is similar to that used by the Red Cross in 1932 and 1933 when 850,000 bales was made available for domestic relief distribution. The Red Cross purchased finished materials from mills and manufacturers and made payment in the government-donated raw cotton according to a system of equivalent values.

Sponsors of the plan assert that it would cut the Government's holdings by one-eighth or more, and proportionally reduce carrying charges which now amount to $45,000,000 annually; also furnish work for mills and employes over normal operations.

CONTINUES COTTON PROGRAMS

Department of Agriculture has continued for another year two of its programs designed to reduce the cotton surplus.

The export subsidy on cotton products (not raw cotton) will operate on the same basis and with the same rates of payment as formerly. Under this program sales and deliveries of cotton products equivalent to 504,020 bales were recorded as of July 1.

The Surplus Marketing Administration has also continued through the current fiscal year ending next June 30, its cotton-bagging-for-cotton-bales program. This program is similar to that which ended June 30, 1939, under which 1,000,000 bale covers of cotton fabric were used. Payments of 25c. per "pattern," or bale cover, will be made to participating manufacturers on the maximum quantity of 1,000,000 patterns.

While continuing the cotton products subsidy program, the Department still is withholding the subsidy program for raw cotton under which 5,800,000 bales were disposed of during the last fiscal year. Though funds have been appropriated, Department officials feel that world conditions are too uncertain to warrant resumption of the program at this time.

EXTEND PHILIPPINE AGREEMENT

The agreement between American and Japanese mill-men covering shipments of cotton piece goods to the Philippines has been further extended for a year beginning Aug. 1. Under the pact, importation of Japanese goods into the island possession is limited to 45,000,000 sq. meters.

However, during the last two years this quota has become more or less academic, since Japan has been unable to fill it due partly to the military operations in China, and partly to refusal of Chinese merchants in the Philippines to handle Japanese goods.

As a result, American exporters have captured the market, increasing their shipments from 29,000,000 to 83,000,000 sq. meters between 1937 and 1939. In that period, Japanese shipments were cut in half, dropping from 50,000,000 to 25,000,000 sq. meters.

The extended agreement does not restrict shipments from Chinese mills, as American exporters had hoped. But State Department officials say the Chinese threat has disappeared largely because of trade difficulties arising from the war.

CARPET MINIMUM WAGE

The Carpet and Rug Industry Committee has recommended to Col. Philip B. Fleming, Wage and Hour Administrator, a 40c. minimum wage for employes engaged in manufacturing wool carpet yarns, and wool rugs and carpets, and 35c. an hour for workers on carpets and rugs made of other fibers.

Fabrics For National Defense

Data on specifications, construction of cloths, and manufacturing methods

TO ASSIST textile manufacturers in producing fabrics required by the country's national defense effort, TEXTILE WORLD begins in this issue publication of a series of articles giving essential information regarding these cloths. Types of fabrics as well as quantities needed for the present program vary in many instances from previous practice. This series, therefore, will place primary emphasis on the newer fabrics and on those required in large volume.

18-OZ. WORSTED SERGE

Five million yards of this worsted serge have been ordered. In point of quantity required, this is the most important fabric in the woolen and worsted group for which contracts have so far been let. It is an 18-oz., closely-woven fabric, intended for use in production of uniforms for enlisted men in the U. S. Army. Two types are required: a dark olive-drab for coats, and a lighter olive-drab for trousers.

This serge fabric is covered by U. S. Army Specification No. 8-94A. A digest of the specification follows:

Stock—Fleece or pulled wool, not lower than 64s grade.

Yarn—Two-ply, spun on worsted system. (Although not stated in the specification, yarns approximately 24/2 in count will yield fabric of correct weight.)

Color — Olive-drab, produced by blending olive and white wools.

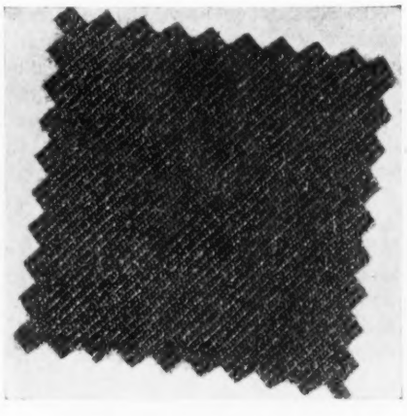

Fig. 1. 18 oz. serge fabric used in army uniforms

Fastness—Fabrics must show good fastness to weather and soaping.

Width—Minimum, exclusive of selvage, 56 in.

Weight—Minimum, per yard, 18 oz.

Ends and picks—Minimum, 68x56.

Breaking strength — Grab method, 1x1x3; minimum, warp, 120 lb.; filling, 110 lb.

Weave—Four-harness, right-hand $\frac{2}{2}$ twill.

Shrinkage—Maximum in length, 4%; width, shrunk cloth not less than 56 in. between selvages.

Finishing—Thorough scouring, light fulling, close shearing, good pressing. Use of weight increasing materials prohibited.

Length—Pieces not less than 50 yd.

SLEEVELESS SUMMER UNDERSHIRTS

Another important textile item in the national defense program is knitted sleeveless summer undershirts for army use. It is reported initial orders on these will total 500,000. The garments are covered by U. S. Army Specification No. 6-233A, which includes the following information:

Yarn—Long-staple, fully combed, singles cotton, free from dirt, nibs and motes. (Although not stated in the specification, yarn 23/1 in count will yield fabric of correct weight.)

Wales and Courses—Plain, flat-knit (rib-knit also acceptable), 30 wales per in., 35 courses per in., with 4% minus tolerance.

Breaking strength — Grab method, 1x1x1; minimum fabric strength, in direction of wales, 28 lb.

Finishing—Scouring, full bleaching; fabric must test neutral after bleaching.

Sizes—34, 36, 38, 40, 42, 44, and 46.

Design—Pull-over athletic type, low necks, no sleeves.

Stitches and Seams—Must comply with Federal Specification DDD-S-751; where two or more methods are given any one may be used.

Collarette and Armhole—Binding fabric same as in body, strips cut parallel to wales; double thickness, not less than $\frac{5}{8}$ in. wide; closing seam for collarette binding at left shoulder, for armhole binding at lower part.

Shoulder Width—1½ in., ± ¼ in.

Hem—Not less than ¾ in.

Weight—Pounds per dozen (6%±):

Size	34	36	38	40	42	44	46
Pounds	2¼	2½	2¾	3	3⅛	3¼	3⅜

RAYON-WOOL FABRICS

Experimental orders for 18 oz. serge and 10½ oz. shirting, each containing a percentage of rayon, have also been placed. The cloths are to be identical in every respect with similar all-wool fabrics except that a blend of 30% viscose cut-staple rayon and 70% wool is used, and that the test for fastness to soap is not applicable.

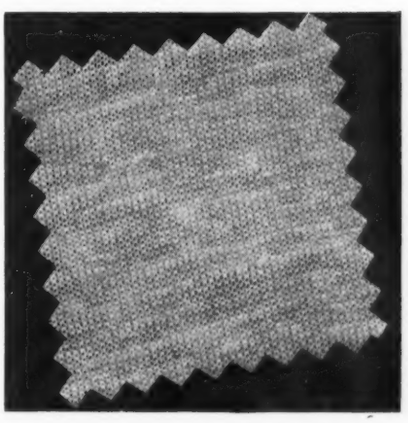

Fig. 2. Knitted summer undershirts are required in large quantities

Defense: A Job, Not an Emotion

You can't scare the enemy with dollars, but with airplanes and tanks

An Editorial Article
By DOUGLAS G. WOOLF

MIND-CHANGING is not only a feminine trait. It is a typically American trait. In fact it is characteristic of all free peoples. As such, it is a boon. Beyond a certain point, however, it has danger-spots.

The pendulum of national thinking in this country swings so abruptly and so violently, that it often approaches hysteria.

The current enthusiasm for a national defense program is a perfect example. For years it has been smart to think in terms of disarmament—for world peace. Parents have preached pacifism to their children for the last two decades. And today they wonder why the youth of the nation is not disposed to grasp the sword. Adults term the new generation as sissy, or communistic or both.

What we are trying to do, as a country, is to convert in a few weeks or months the national thinking from a pacifistic to a militaristic basis.

Granted without question that this country has a compelling reason for building our defenses as rapidly and as efficiently as possible, we should still try to keep balance insofar as that program is concerned.

Specifically, we should not imagine that the appropriation of billions of dollars for defense is any assurance whatsoever.

Here is the point: Every dollar appropriated beyond an amount that can be used effectively, is merely an additional drain on our national economy. We cannot scare our potential enemies—whoever they may prove to be—by appropriating billions of dollars. They—whoever they are—know already that we have more gold than we know what to do with.

The only way we can "scare" them to the point of not wanting to take us on, is to spend our dollars sparingly, efficiently, so that we can talk in terms of soldiers and airplanes and tanks and battleships—not in terms of money.

TO THAT END, what should we do? We should get our defense program on a business basis; we should prepare to spend every necessary dollar but not a single unnecessary dollar.

A start has been made in that direction—and a swell start. The National Defense Commission (short for the Advisory Commission to the Council on National Defense, which title we shall not use in these columns) has among its personnel some of the best brains in American industry, labor, agriculture, and other groups. Our own textile representation is a good sample.

This commission has been able to cut red-tape, and to get many important jobs—seemingly impossible two months ago—under way. Thus far it has done it by diplomacy—even if that diplomacy has had a "You better had. . .or else!" weapon to back it up.

Sooner or later, however, there must be a more direct approach. We hope it comes "sooner."

Frankly, the Services—both Army and Navy—are partly wrapped up in red-tape—and red-tape that dates back to 1918. Many officers have little realization that war, like industry, pushes constantly to new frontiers—and that methods effective a decade or two ago are obsolete today. This is not a blanket criticism, as the Services include a host of sincere, earnest men, but it is sufficiently widespread to require action.

The need seems to be not merely for coordination, but for a High Command which can and will tell everybody in the Services what must be done—and see that it gets done.

The National Defense Commission seems to be the ideal body for such a responsibility. Granted that the task is an autocratic one, the Commission is a democratic group in that it represents all major interests in our economy.

This writer understands that such a grant of power to the Commission would require new legislation. This should be made the first business of Congress, now released from the politics of Philadelphia and Chicago.

ONE MORE POINT: Average Mr. Citizen is going to expect immediate action from this defense program. He is going to expect, now that we have appropriated ten billions of dollars and enlisted the aid of men like Knudsen, Stettinius and Hillman, that over-night this country will be changed from a defenseless status to one in which we can lick the world. Somehow or other, Mr. Citizen must be taught the facts of life. He must learn that we are trying to extricate ourselves from the same type of complacence which brought France to her knees. He must know that there is no Aladdin's lamp which will summon "clouds of airplanes" and all the other instruments of war to our aid. He must realize that money is not materials. He must learn, particularly, that he is in for years of "paying through the nose" for the safety which, we will grant, he has a right to expect. But he must also know that it is no exclusive fault of industry or government or labor or agriculture that such hopes cannot be speedily realized.

He must realize that it is his fault—and yours and mine—and start from there. With such a realistic springboard, this country can go ahead and prepare—and eventually tell the Brutes of Europe to go to hell.

In this writer's opinion, that is just what the United States of America is going to do.

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Half-Year Textile Activity High

Rate equals that of banner year 1939 —Defense needs promise continuation

DESPITE ALL THE LAMENTS over the quiet in the textile markets during a good part of this year, the industry has gone merrily along. TEXTILE WORLD'S index of textile mill activity for the first half of 1940 stands at 132 (on a basis of 1923-25 as 100.) This is the same rate as for the full year 1939—which incidentally was a record year in textile production. In other words, if the industry continues at the same rate for the rest of 1940, it will have equalled 1939, despite wide-spread predictions that this would be an "off" year for textiles.

But there is more to the story than that. The current feverish activity in national defense plans, involving not only direct Government purchases of textiles but the indirect boom effect, on textiles, from other industries even more vitally affected, would seem to promise such continued activity. There is the further possibility that the rate may be accelerated, and a new textile record set in 1940.

The uncertainties of the situation—particularly those pertaining to European developments, need little emphasis here; everyone is only too aware of them. There is also the question as to how much American business, with its natural extremes of optimism and pessimism, may have over-anticipated the effects of the war and the defense program. Against these doubts, however, stands the hard, cold fact that this country has embarked upon a long period of intensive preparation. Industry must supply the needed equipment and materials. Bearish news from Europe might cause temporary recessions, but the general trend for at least the next year should be upward.

TEXTILE WORLD'S Textile Mill Activity Index

1923-25 average=100

1929	115
1930	89
1931	93
1932	83
1933	104
1934	90
1935	105
1936	124
1937	125
1938	103
1939	132
1940 (*Half Year*)	132

HERE ARE A FEW statistics about textile mill activity for the first six months of 1940:

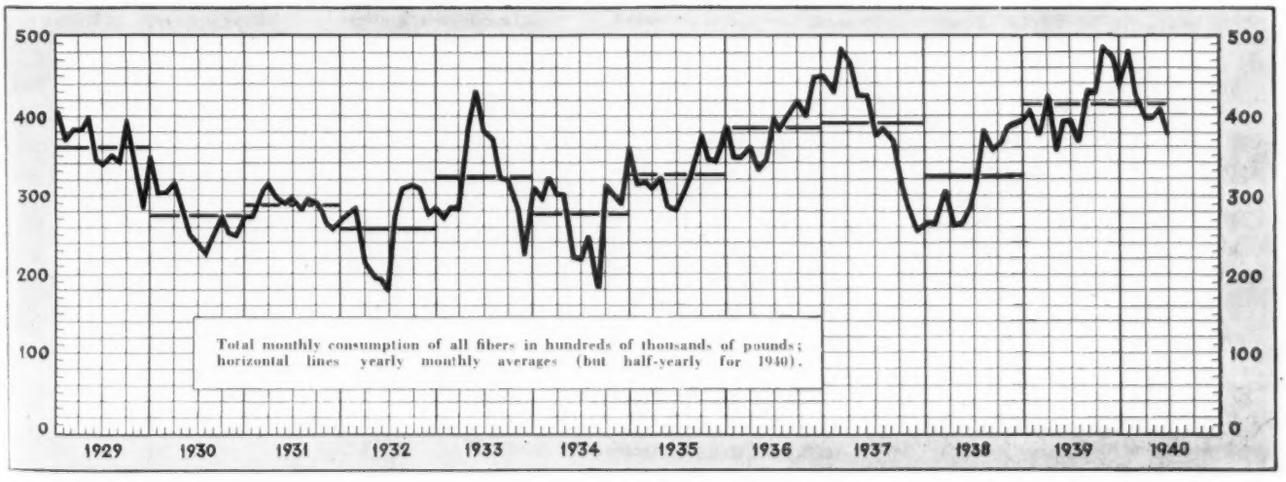
It was 6% greater than that for the first half of 1939.

The activity for the 12 months ending July 1, 1940 (that is, for the last half of 1939 and the first half of 1940) was at an even higher rate than for the calendar year 1939; it was 136 against 132 (on the basis of 1923-25 as 100).

For the individual fibers, consumption during the first six months of 1940 compared as follows with the corresponding period of 1939: Cotton, 8% *up;* wool, 8% *down;* silk, 32% *down;* filament rayon, 13% *up;* rayon staple, 19% *up.* These compared, as previously noted, with a 6% *increase* for the industry as a whole in the first half of 1940.

From most statistical and psychological standpoints, it is becoming increasingly apparent that the textile industry has greatly improved, in recent years, as a field in which to operate, and as an industry to attract the sales efforts of those who supply it with equipment, accessories and supplies. Consistent sanity in production and price policies, on the part of the textile manufacturers themselves, will remove the last of the obstacles in the way.

TREND OF GENERAL TEXTILE ACTIVITY



Cotton Mill Costs

Reasons for cost gain in New England mills shown by figures for 1875 to 1939

The following article giving a comparison of the cost of manufacturing a typical cotton fabric 65 years ago and today is abstracted from a bulletin issued recently by F. P. Sheldon & Son, Providence, R. I.

AS A MATTER OF HISTORICAL INTEREST, we have recently examined authentic data revealing the relative cost of manufacturing cotton cloth in New England mills during the decade 1869 to 1879 and the present time, but previous to the recent increase in wages. The comparison is provocative of some surprise, as we did not realize that improvements in machinery and greater efficiency in processing had compensated, to such a degree, the constantly rising costs to which the industry has been subjected.

As a criterion, we have chosen an enterprise that was in operation in 1875 and is so today; one that has always enjoyed an eminent reputation for the quality of its products and the ability of its management. For the cloth on which to base a comparison of manufacturing costs, we shall use the principal fabric woven by this mill in 1875; viz., a 3.25-yd. sheeting, 84 reed, 96 picks, 28s warp, 36s filling, 40 in. gray width.

This mill, containing 50,064 spindles and 828 looms cost complete, in 1875, $725,074, or $14.48 per spindle. A complete mill of equivalent productive capacity in 80 hours would require today about 30,000 spindles, and would cost probably at least three times as much per spindle, or $45. (In 1875, in Massachusetts, the legal hours for adult males were 65½, and for women and children, 60 per week.)

Manufacturing costs in this same mill, for six months ending April 1, 1875, for the fabric specified above, were 22.078c. per lb. The current cost of this same cloth (before the recent rise in wages) manufactured by the same enterprise, was 33.51c. per lb., exclusive of cotton, or an increase of 51.8%.

THE LABOR COST, per se, was, in 1875, 12.675c. per lb., and the overhead expense, including supplies, etc., 9.403c. per lb., whereas these same items today (before the recent rise in wages) were 20.35c. and 13.16c. per lb., respectively, for labor and overhead expense; that is, cost of labor has increased 60%, and overhead expense 40%, since 1875, showing the predominant influence of labor's aggressive policies and legislation during the past decades. Meanwhile, the ratio of labor cost to total manufacturing cost has only increased from 57.40% to 60.73%.

The cost of carding, spinning, spooling, and warping, together, for productive and non-productive labor, was, in 1875, 5.227c. per lb., and in 1939, 8.22c. per lb.—an increase of 57%; similarly, the weaving cost was, in 1875, 6.751c. per lb., and in 1939, 9.10c. per lb.—an increase of 35%.

Another interesting factor is the relative cost of power for mechanical operation, as well as for light, heat and slashing, wherein it will be found that the expense for these four items together per pound of cloth produced was, perhaps, somewhat less in 1875 than now, notwithstanding the higher efficiency of modern steam-generating and power units. This circumstance probably results from the substantial increase in power required to operate modern machinery and the consequent increase in fixed charges on a power plant of approximately double the capacity that was necessary in 1875. The mill here under consideration, taken as a whole, in 1875, required only 17.7 hp. per thousand spindles, or a total of 885 hp., whereas an equal number of spindles would, today, require at least twice as much, or 1,770 hp.

While we have drawn a comparison from only one typical fabric, there is no reason to presume that the relative difference in manufacturing cost of other cotton cloths would be contrary to the conclusion disclosed by the above example for the years 1875 and 1939. While the circumstances may be of only academic interest, yet one may be inclined to comment on the fact that notwithstanding all the improvements in machinery and vigilance in management, our manufacturing costs are substantially greater today than 65 years ago.

On the other hand, when we consider the extraordinary rise in wages since 1875, the result appears to be very gratifying. The average hourly earnings in 1875 were not above 12c.; but in August 1938 the average hourly earnings for 66 northern mills was 43.7c.—or over 3½ times as much, so that whereas labor today is paid over 3½ times as much as in 1875, the manufacturing cost, per se, of the same fabric is only a little over 1½ times as much now as then.

Or, expressing these facts in another way, in 1875 one hour's labor produced 0.95 lb. of cloth, whereas in 1939 one hour's labor produced 2.14 lb. of cloth—an increase of 125%, resulting from improved machinery and more efficient processing. And if we include the overhead expenses as well—reflected in the total manufacturing costs of 22.078c. and 33.51c. per lb.—then the productivity of one hour's labor is 140% greater in 1939 than in 1875. This conclusion should refute any contention that the cotton-textile industry is decadent or that its profits, if any, are made at the expense of labor.

IT MIGHT APPEAR TO THE EMPLOYEE that by reducing his hours of labor by 33% and at the same time increasing his rate of wages over 3½ times, he had appreciably added to his comfort, but on further consideration it would seem that this advantage has been gained at the expense of security. The net profits of the enterprise we have used for illustration were $1.38 and $3 per spindle, in 1875 and 1879, respectively. (Of profits for the intervening years we have no record.) But, assuming an average of $2 per spindle for that period, then the first cost of $15. per spindle would be liquidated in 7½ years, representing a return on the investment of about 13%.

Contrasting this situation with conditions during the last five years, 1935 to 1940, when our New England mills (excluding those making only thread and sales yarn, tire yarn and tire fabric; mills weaving only rayon; and those operating separate units in the South) failed to earn, as a whole, not only any profit but likewise anything for depreciation (the actual deficit being approximately $1 per spindle), it is obvious that the industry cannot continue indefinitely to operate under so many burdensome restraints, and that capital will continue to withdraw its funds.

In 1878, manufacturers were complaining of the disparity between supply and demand and lamenting the great business depression of the preceding three or four years which still harassed them, and the panacea was then, as it had been before, and is now, to reduce the number of hours constituting a week's work; but the futility of this expedient is demonstrated above.

Mill Worker Takes on Farming

Voluntary exodus to adjacent rural district from West Point Mfg. Co., towns

By FLOYD TILLERY

The five industrial towns referred to in the accompanying article are Lanett, Langdale, Shawmut, Riverview and Fairfax, located along the Alabama shore of the Chattahoochee River. From Lanett to Riverview, the two extremes, is about eight miles. Here is located the chain of mills operated by West Point Mfg. Co. The total population aggregates approximately 25,000. The houses are neat and well painted; the streets are paved. There are schools, playgrounds, churches, theaters, and shopping centers. The community affairs, social, civic, religious, are managed by the people themselves without outside pressure.—Editor

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PERHAPS THE MOST INTERESTING and encouraging phase of the social and economic life associated with the Five Industrial Towns of West Point Mfg. Co. is the recent exodus of scores of the workers to the rural districts adjacent to each of the cotton mill communities. This is the latest development of the original program conceived by foresighted executives in 1890.

Today practically every road leading into these Five Towns is dotted with new and attractive homes, built by the textile operatives on small plots of ground they have bought for themselves within the last three years. For the most part the home-sites consist of from five to ten acres of land—enough for large patches of corn, potatoes, a small orchard, a vegetable garden, a barnyard, and a pasture.

The owners drive into town in their automobiles, taking perhaps three or four members of the family, the mill employees among them working from six o'clock in the morning until two in the afternoon. Then they return to their country homes, reaching there in time to put in several hours on their farms. As a result, these people, happier and healthier then they have ever been, are raising practically all their produce, including vegetables, milk, butter, eggs, corn, potatoes, fruit, and much of their meat.

In one of the neighboring rural communities, 150 people work in the two nearest cotton mills. The weekly payroll of this group usually amounts to something like $2,250, and a considerable portion of this money is spent in the country where these workers live. The storekeepers, the colored servants who take care of the workers' homes, and the other laborers who are employed to help cultivate the small farms—all come in for their weekly share.

A weekly payroll in the rural districts is something entirely new, and the beneficial influence of cash-trading is making itself definitely felt. Already the improvement in standards of living among the country people is noticeable. Farmers who have heretofore lived in poverty and almost in want have learned that they and their families can fare much better by giving up the unprofitable cultivation of large fields of cotton, and dividing their land into small plots, selling these to the mill employees, and they themselves, the farmers, working 8-hour shifts in the textile plants and the remainder of the day on small acreages of their own.

On the other hand, the more provident cotton mill people, having become convinced that this back-to-the-farm movement is a profitable venture, are constantly completing arrangements to buy, build, and move their families into the country. Having once lived in the model mill villages with the advantages of running water, electric lights, and similar conveniences—together with the pleasures of the radio and telephone—the textile workers are unwilling to go backward and consequently are carrying their urban civilization into the country with them, thus helping greatly to raise the levels of living among the farm people in general.

Naturally, the owning of homes gives permanency of residence to the workers, and therefore makes for steadiness of employment, creates additional loyalty and interest. The executives of the textile corporation operating in the district have said that from the beginning it was hoped that eventually the employees in the mills would realize the advantages of living in the heart of these separate rural sections, with the attendant opportunities of owning small farm-homes, at the same time earning their main livelihoods by working in the factories. At one time the company is said to have thought of offering to aid worthy, ambitious employees in buying small homes in the neighboring rural communities. The plan, however, seemed a bit too paternalistic, so that it was decided to wait for the normal, natural development of the idea which is now an actuality and growing in popularity.

The textile men and women who are moving back to the farm today are doing so with full confidence in "the mill company," appreciating deeply the fact that good wages and uninterrupted employment during the past have made possible this recent exodus to the country with its new opportunities.

Home of H. E. Elkin, assistant to overseer of weaving, Lanett (Ala.) Mill built on a 30-acre site six miles from Lanett. This homestead is typical of many others in the Chattahoochee Valley.

Sets Up Textile Unit

Rayon manufacturer goes in for large scale textile research at Marcus Hook

A LARGE AND COMPLETE textile manufacturing unit is being established in conjunction with its Marcus Hook, Pa., plant, by the American Viscose Corp. This unit is under the direction of the recently-organized Sales Development Department, and it will have equipment to engage in original research or trouble shooting in virtually all phases of manufacture which lie beyond the initial preparation of the continuous filament rayon or the rayon staple. Six major purposes of the textile unit are reported. They are: to test all Crown products in textile processes in addition to the quality testing that is done at the mill; to check the textile technique now employed in various branches of the industry; to develop new technique and to work with machinery manufacturers; to develop new applications and uses of Crown products, including Vinyon; fabric development work on samples for that department of the company in New York; help to the corporation's staff by giving technical knowledge based on practical mill experience.

The machinery set-up at the present time is largely of the cotton type, but it is soon to be supplemented with complete wool-handling machinery in line with gains in rayon use in this field. The cotton cards are arranged to utilize laps from picker-lap machine or from Bramwell feed. Two processes of drawing follow the carding operation. On the roving frames both Superdraft and the older arrangement of slubber, intermediates, and fine fly frames are installed. The spinning equipment allows for four different methods of handling rayon staple, including two conventional arrangements with different roll coverings, one long-draft system and another especially devised for handling 3-in. staple.

Staple length of 3 in. for cut rayon is an item on which the company is focussing considerable experimentation, and side-by-side with the conventional preparatory machines are others adapted for handling this longer-than-usual type.

Warping equipment embodying both silk and cotton systems comes from Entwistle, Sipp-Eastwood and Cocker Machine. The cone creel is equipped with three types of yarn tension devices. The slashing equipment is of Johnson make and consists of one three-can, older-type slasher, and one seven-can latest model.

Weaving is handled on 14 looms including non-automatic and automatic, the latter of both bobbin-changing and shuttle-changing types. The present set-up includes Draper models K, XK and XD, and Crompton & Knowles C-4 and S-4. There is also a 72-in. loom for wide sheetings and upholstery fabrics with a C & K intermediate head.

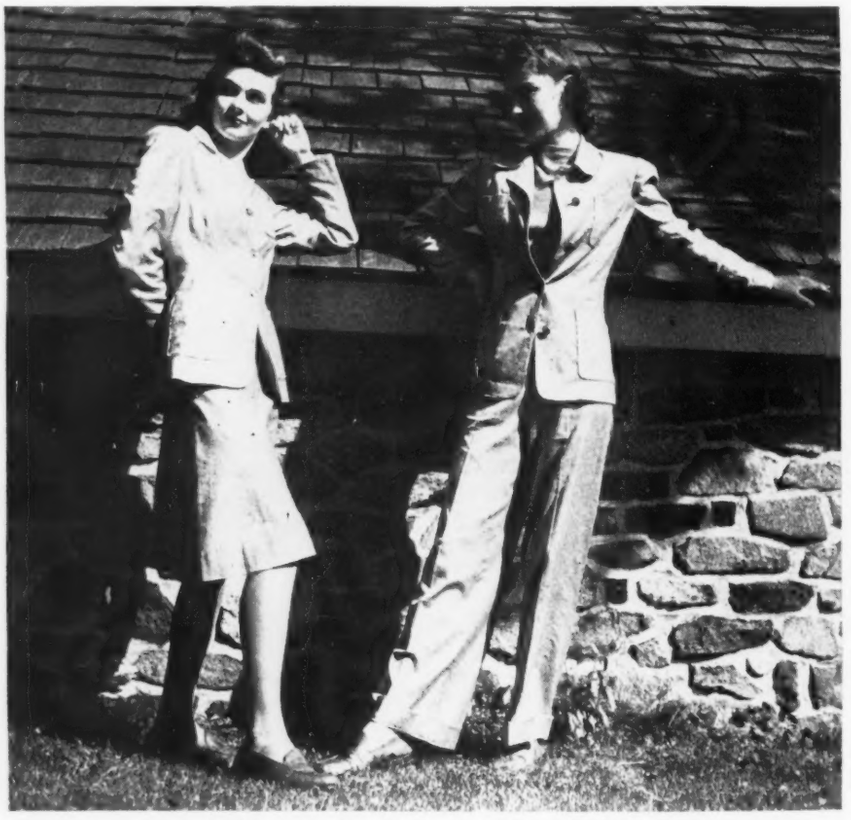
In the knitting section, a new Whitin high-speed tricot machine is running on 55-denier Seraceta acetate rayon. There are eight Wildman single-section, single-unit full-fashioned hosiery machines and four Wildman spring needle circular knitting machines. There is also a Wildman ribber and a Scott & Williams Model K machine.

The throwing section includes Atwood, Fales & Jenckes and Fletcher equipment.

The dyehouse is equipped to do rawstock dyeing, skein dyeing, package dyeing, beck or string dyeing, and dyeing and finishing with padder. There is also a tenter, a rawstock and skein dryer, fabric drum dryer, extractor, hosiery boarding equipment, decatizer and a calender for drying and finishing.

It is evident from the scope of the installation that the company recognizes virtues in large-scale textile research. The facilities at hand must ultimately have an improving effect on the general technique of handling rayon yarn, in addition to aiding in fabric creation and finishing developments.

In addition to the personnel of the Sales Development Department, there is a staff of about 30 technical experts and workers in this textile unit. The department itself is in charge of E. S. Kennedy. Testing for this department and other departments of the corporation is conducted at the Textile Research and Standards Laboratory, also located at the Marcus Hook plant, in charge of Dr. Francis Bonnet.



COLLEGE "SEPARATES" in Crown Tested spun rayon and cotton corduroy—a new, rich-textured fabric, in lovely colors. Both jackets in new longer length with an easy mannish cut; slacks—and skirt. Such fabrics as these are perfected by the Sales Development Dept.

Credit Union a Constructive Force

Represents one more step toward better industrial relations — textile cases

By SPECIAL CORRESPONDENCE

ONE OF THE GREATEST NEEDS of the average cotton mill employee is the same need of any small-salaried man, regardless of his source of income: loan facilities. Obviously even a thrifty man may face emergencies which require financing through borrowing. Loans for limited emergencies, such as household equipment and vacations, have become a habit with the American working people. For the small borrower, sans collateral, there is difficulty in finding a satisfactory loan agency. Small consumer loans are relatively expensive to make and collect, and banks are forced to discourage them. Often the small borrower is an unwitting victim of sharp practices in the channels to which he is forced to go. The credit unions, with their low cost system of lending and their incentives toward thrift and saving, are rapidly increasing in patronage and seem to be a logical answer to the problem.

We are familiar with the occasional lurid stories such as that of the housewife who borrowed only $50, but who, through high, cumulative interest charges amounting to nearly $1,500 in a year's time, was forced into theft and embezzlement. Other situations stemming from the same root may not be quite so exaggerated, but are equally heartbreaking, and exist under our very noses in our mill villages. Mill executives may encourage the establishment of Credit Unions in their villages with confidence that the move is along lines of public service.

In 1909, in Massachusetts, the first Credit Union law in this country was passed. Today 41 States have Credit Union laws, and in 1934 a national law was passed. There are now 4,000 Federal Credit Unions and 5,000 with State charters. North Carolina has State-chartered Credit Unions predominating; South Carolina more Federal than State; Georgia, about half and half. But wherever and however operating, we find them helping to raise the standard of living for their subscribers, giving them a greater sense of security, and establishing psychologically, among them, the feeling of better citizenship.

The funds which are drawn upon for loans are savings deposits, so that thrift and saving are encouraged at the same time that loan facilities are provided. A limit of total deposits by one individual is generally set at several hundred dollars and the funds, being deposited in local banks, are protected by the Federal guarantee of deposits since the amount in any one bank is not over the guarantee limit.

Relatively few textile communities have taken advantage of the Credit Union System. Doubtless many would start Credit Unions if they were familiar with the simplicity of the mechanical arrangements and realized that they do not involve the mill financially.

USING NORTH CAROLINA as a working example, the plan of credit union operation in a textile mill organization is, briefly, this:

The credit union is organized by employees under the direction of the superintendent of the Credit Union Division, N. C. Department of Agriculture. Any person living and working in the village may join, whether he works in the mill itself, the village post office, the local stores, or what not. The joining fee is 25¢, and each member is supposed to buy stock in the Union, at $5 per share, which may be bought on time and as little as 25¢ a week per share paid. Annual dividends on the members' deposits are paid, generally on a 4% basis. The shares are similar to savings in a bank and may be withdrawn.

To borrow, a person must be a member of the Credit Union and should have some interest in the stock. The Credit Committee is authorized to lend up to $50 on the borrower's own endorsement. Amounts above that must be secured by collateral or a responsible endorser. Loan limit is $100. A straight 6% interest charge on all loans is standard, with a minimum payment of 25¢ interest. Loans must be repaid weekly and may extend over three to six months . . . sometimes as long as a year. Loans are granted for "constructive needs" such as medical care, dentistry, household equipment, beneficial vacations, etc.

The mill management has no more to do with its local Credit Union than it desires. They are usually organized by the employees (with cooperation of N. C. Department of Agriculture) for the benefit of employees. Members elect their own officers, manage their own Credit Union, participate in its profits. The Department of Agriculture furnishes an auditor who trains the local Credit Union officers in procedure and makes periodical inspection of the books. All funds are deposited in local banks.

Out of 130 Credit Unions established in North Carolina, less than 10 are for the benefit of textile mill employees. But the record growth of those established in textile areas testifies that they answer a crying need. For instance, the largest in North Carolina is that at the American Enka Corp. It is six years old. Enka employes 2,800 workers; the Credit Union has 2,600 members, and its total assets are $200,000. The Valdese Credit Union has $80,000 assets. More recently organized is Cramerton's Credit Union, which was started only six months ago, now has 600 members and nearly $7,000 deposited; nearly $10,000 has been loaned since organization.

Total costs of organizing a Credit Union in North Carolina are: Filing of organization papers with Clerk of Court, $3; Bookkeeping supplies (which must be standard and bought through the N. C. Dept. of Agriculture) sufficient for 250 members for one year, $20 (additional supplies amount to not over $10 annually); premium on treasurers' bond ($4 per $1,000), $4.

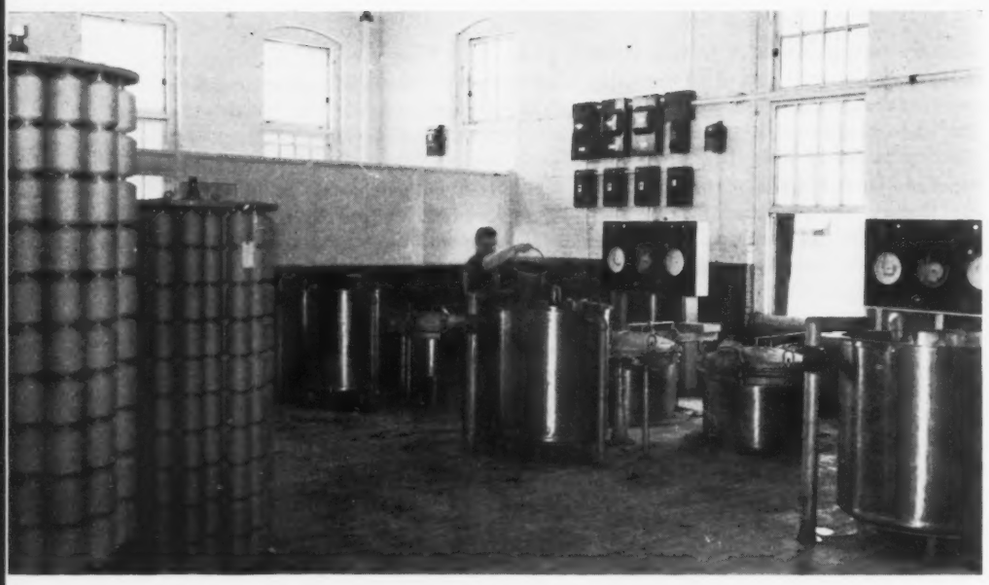
Services of the superintendent and auditor from State Dept. of Agriculture are free.

North Carolina will allow costs, with exception of the filing fee, to be paid off on a time basis if the union does not wish to pay in full when organized. Costs in other States are comparable with the above.

For years cotton-textile mills in the South have been a tremendous socializing force. They have provided healthful working and living conditions, and recreational and educational facilities. Establishment of mutually operated Credit Unions is another step toward better industrial relations and greater industrial efficiency.

New Callaway Towel Mill

Producing 10,000 doz. weekly; completes company's line of bathroom accessories



Stainless-steel equipment and fully-automatic controls insure even, fast dyeing

ENTRY INTO the towel manufacturing field with a complete line of high-quality terry towels was recently made by Callaway Mills, LaGrange, Ga. These towels complete the bathroom ensembles of wash cloths, bath mats, waterproof curtains, etc., which are now being merchandised nationally under the company's brand. The step into the towel field was made after careful analysis of the quality market and establishment of a special plant, according to R. D. Williams, Jr., vice-president in charge of sales. Samuel P. Parker, with over 25 years experience, is supervising the manufacture of the new line. Arthur R. Neill is directing merchandising.

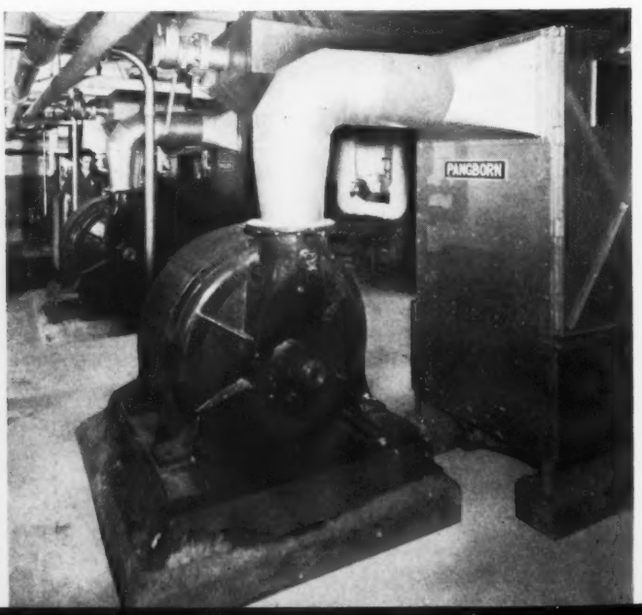
Present production is about 10,000 doz. towels per 80 hr. week. The latest equipment for weaving, dyeing, finishing, and sewing, as well as much auxiliary machinery, has been installed in the company's Elm City plant, in LaGrange. Duck equipment formerly in operation there has been transferred to other plants, where it will be continued in production. The only used machinery in the entire mill is in the preparatory department, which has been improved and changed over to produce a range of yarns from 14s to 30s. There are 11,664 long-draft spindles producing yarn for towels. A new building was erected to house the finishing department.

Yarn for colored towels is wound on stainless-steel tubes before going to the dyeing department, which is equipped throughout with latest type machinery for package and beam dyeing. There are three two-kier Gaston County dyeing units, designed to handle 300 packages of yarn per kier. All major parts of these machines—kiers, pipes, pumps, expansion tanks—are of stainless steel. Vat dyes are used.

Each dyeing machine is equipped with a set of Bristol time and temperature control and recording instruments. These devices will automatically start and stop the pump, turn on and off the steam, and reverse the circulating valve when necessary.

After extraction, dyed yarn is dried by means of two four-port Gaston County dryers. A unique feature of these machines is application of a new Westinghouse development, the Pangborn Precipitron, which precipitates dust from the air before it reaches the yarn. By means of electrical charges, the dust becomes ionized and attracted to a series of grids, each charged with 12,000 volts. This effectively cleanses the air of particles which normally would

Left. From left to right in background are slack washer, water mangle, drying cans, tenter frame; girl in foreground is cutting towels apart. *Right.* Dust is precipitated electrically from air going to dryers by this device



Edges are hemmed by twenty flat-lock sewing machines like this one

be deposited in the yarn. The blower used in this machine was manufactured by Roots-Connerville Blower Corp.

The entire operating floor of the dyehouse is served by a Cleveland tramrail conveyor which makes handling of heavy loads easy and efficient. Another factor which makes work more pleasant for the employees is 48-in. I.L.G. exhaust fans which change the air every 1¼ min.

DYED YARNS ARE WARPED to section beams by a Saco-Lowell 464-end magazine-creel warper, and to loom beams by a Cocker 1,200-end magazine-creel warper. Slashing is done on two Saco-Lowell double-head slashers which operate at approximately 50 yd. per min. Dyed beams and packages are stored in one end of the weave room, where they are readily accessible.

The dyed, warped, and slashed yarn is woven into towels on the newest Crompton & Knowles jacquard and dobby looms. The more intricate designs are constructed on 140 Model C-3 terry-towel looms, 38 in. between swords, utilizing 624-hook jacquard machines with double lift, double cylinder and French index. Also, there are twelve Model C-3 looms with sixteen harnesses and double-cylinder dobbies. Huck and crash towels are woven on 60 Model C-3 looms, 30 in. between swords, utilizing 20 harnesses. Each pair of jacquard looms is lighted with a General Electric 100-watt fluorescent lamp designed to reduce eyestrain.

When they come off the looms, towels are passed over three inspection tables, where they receive a preliminary examination on both sides.

FINISHING of the towels is extremely important, since much consumer appeal is secured in this department. With this in mind, no effort was spared in erecting a new two-story, 77x83 ft. building and securing the most modern finishing machinery available. Textile Finishing Machinery Co. supplied most of the major equipment, with the exception of a large Proctor & Schwartz dryer.

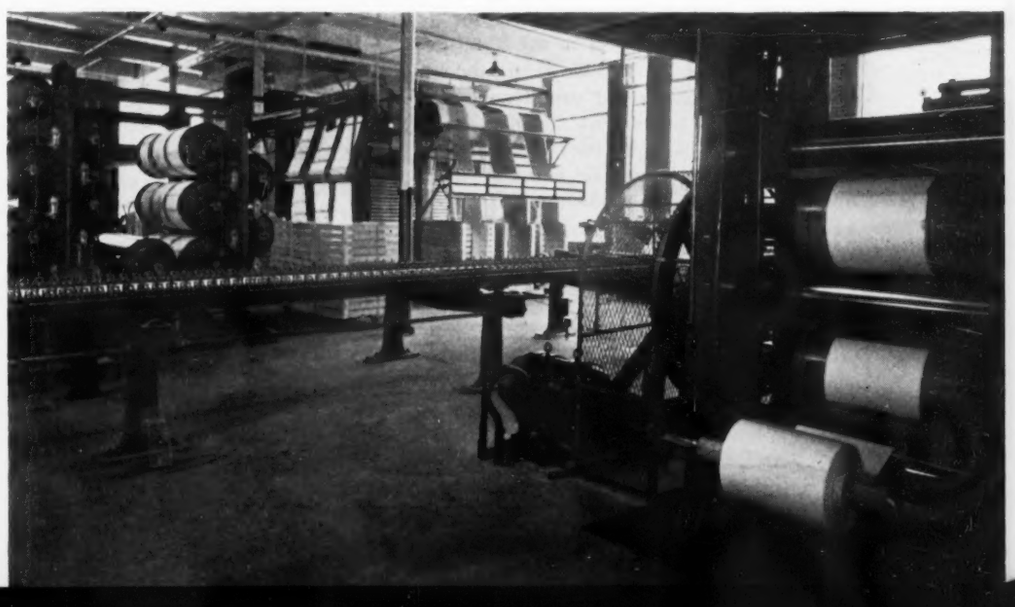
All towels in the gray—terry, crash, and huck—enter a saturating machine where they are thoroughly wet out. The next step is a peroxide bleach in a two-ton kier. The bleached goods then go through a slack washer, where bleaching chemicals are removed. Next is a scutcher and water mangle, which opens roped fabric and adds bluing and softening. At this point the terry towels are separated from the others and put through the Proctor & Schwartz three-section loop dryer. Huck and crash towels are dried on regular drying cans, after which they are sprinkled and passed through a heavy five-roll calender. Final treatment of huck and crash towels is straightening on a 30-ft. tenter frame.

All towels are finished in continuous lengths, which means that they must subsequently be cut and hemmed. They are cut apart in one corner of the finishing department and passed immediately into an adjacent department for hemming, labeling, and packing. In this room there are 20 Wilcox & Gibbs flat-lock sewing machines, four Merrow over-edging machines, three Singer labeling machines, and one Saxmayer bundle tyer. Labels used on towels are printed on a Markem Machine Co. printing machine. Towels are again carefully inspected in this department before being shipped.

Miscellaneous equipment in connection with the dyeing and finishing department includes a 150,000 gal. R. D. Cole cold-water storage tank, two Permutit water-softening devices, a 2,700 gal. Whitlock hot-water storage heater, Elliott deaerating heater and Permutit chemical feeder for boiler water.

Engineering work was done by J. E. Sirrine & Co., Greenville, S. C. Newman Construction Co. erected the new building.

Close-up of calender rolls and tenter frame in finishing department; drying cans and loop dryer can be seen in background



Analyzing Novelty Yarn

Accurate tests make possible correct determination of composition and cost

ACCURATE ANALYSIS of yarns is necessary for the proper determinations of costs, percentage composition (when the yarn is composed of two or more fibers), twists and yarn counts of component parts, and other essential data. The purpose of this article is to outline several of the more important tests to be made on novelty yarns, and indicate methods by which these tests may be carried out in the mill. It was prepared originally in reply to an inquiry received by our Questions & Answers Department, but is of sufficiently widespread interest to merit publication in full.

For illustrative purposes, we have selected a ratine burette novelty yarn composed of a core of approximately 30/1 cotton, with a 20 cut woolen yarn burretted on it, and a 30/1 cotton binder. Costs of yarns used are assumed to be as follows: 20 cut wool, $1 per lb.; 30/1 cotton, 70c. per lb.

Using a twist tester, set the movable jaw to the 10-in. mark, to test 10-in. lengths of yarn. Insert a length of yarn between the jaws. One end is secured to the rotating jaw; the other, under normal tension—no stretch must occur—is secured to the stationary or non-rotating jaw. Adjust the turns indicator to zero and rotate the spindle in the direction required to remove the binder twist. Continue turning until all twist has been removed, leaving the binder yarn free between the jaws. Cut this length of free binder yarn carefully at each jaw, and measure it. If the counts of the binder yarn must be determined, record its length, then set the length aside for weighing later. Record the indicated turns, read from the dial, remembering that the total turns are registered for 10 in. of the finished yarn and should therefore be divided by ten to convert them to a twist-per-inch basis. If the tester has a take-up device it may be possible to obtain a record of the take-up. In the yarn under consideration the binder thread is longer than the fancy twist which it binds, and take-up has to be recorded by difference—the length in the finished yarn compared to the straightened length of the component yarn. Without touching jaw settings, remove the twist from the fancy yarn. With this type of yarn, which contains nops, care must be exercised because of the excessive length of the woolen nop yarn. If the twist tester has a take-up slide, it can be released to take up any slack in the core yarn, while the analyst gives his attention to the unraveling of the nop yarn. After all twist has been removed, cut the respective lengths of yarn at both jaws, measure the length of each, and record the actual length against their respective names—for example, cotton core yarn and woolen nop yarn. Set these lengths aside to be weighed, if necessary, for count determination. Record turns and take-up.

This completes the routine necessary to obtain data for one test. Continue as outlined in the foregoing procedure until a satisfactory number of tests has been made. To illustrate the procedure, five tests were made on the sample, but a minimum of ten is recommended—more if the variation does not indicate a frequency.

Weigh the lengths of yarn set aside from the tests. With the known values of length and the grain weight of those lengths, it is a simple matter to determine the count or size of each yarn. In this analysis the lengths of both cotton binder and cotton core can be weighed together, as they are alike in count. When the count of the yarn is definitely known beforehand, as is the case with this yarn, calculation of count will, of course, be unnecessary.

Assemble the results of the various tests in tabular form and determine totals as illustrated in the accompanying table. To obtain a check on the analysis, determine the actual weight of the finished yarn. In this analysis only 10 yd. could be weighed, due to the smallness of the sample. Weighing greater length, when possible, is advisable.

RESULTS OF TESTS ON RATINE YARN

	Inches of component yarns in 10 in. of novelty yarn.			Turns in 10 in.	
	Binder	Fancy			
Test	Cot.	Cot.	Wool.	Bind.	Fancy
1	11.25	11.12	19.5	72.5	213.5
2	11.12	11.13	19.5	72.0	212.0
3	11.13	11.12	19.5	73.5	214.0
4	11.50	11.13	20.0	74.0	210.0
5	11.50	10.50	19.5	76.0	204.0
Totals	56.50	55.00	98.0	368.0	1053.5
Take-up	6.50	5.00	48.0	....	....
Turns per in.				7.36	21.07

CALCULATIONS. From the table we note that production of 50 in. of the finished yarn required 56.5 in. of the cotton binder and 55 in. of the cotton core, or 111.5 in. of 30/1 cotton yarn, and 98 in. of the woolen nop yarn. Since 111.5 in. of 30/1 cotton yarn should weigh 0.861 grains, and 98 in. of 20-cut woolen yarn should weigh 3.176 grains, the total weight of the cotton and woolen yarns in 50 in. of the finished yarn should equal the sum of these two, 4.037 grains, and 10 yd. of the completed yarn should weigh 29.07 grains. The actual weight of 10 yd. of the sample being tested is 28 grains; thus, there is a 3.8% error or variation. This result indicates that, while the method of testing is sound, more tests are necessary, as previously suggested.

The proportionate weight in grains of each yarn—binder, core, and nop—is very important, because it indicates the proportionate weight of each yarn that will be required to produce a definite amount of the fancy twist. To these weights allowances must be added to cover waste. In the yarn being analyzed more waste, in actual pounds, will be made of the woolen yarn than will be made of the cotton yarn. If 2% total waste is made, then of this amount 78%, or 1.56% out of 2%, will be woolen yarn. If the total waste is kept down to 1%, then 0.78% will be woolen yarn.

To ascertain the amount of cotton and woolen yarns required to produce 100 lb. of the finished fancy yarn, allowing 2% total waste, we must determine the percentage of each of the component yarns. Thus, the woolen yarn, weighing 3.176 grains, equals 78.7% of the total; the cotton yarn, weighing 0.861 grains, equals 21.3% of the total. Then, 78.7 lb. of woolen yarn, plus 1.56 lb. waste, equals 80.26 lb. of woolen yarn required; and, 21.3 lb. of cotton yarn, plus 0.44 lb. waste, equals 21.74 lb. of cotton yarn required. Thus, 100 lb. of the finished yarn will require in its production the sum of these, or 102 lb. of the component yarns.

Spacing of the nops in the woolen yarn is determined by physical inspection. In the sample being analyzed there are 22.5 nops in 36 in., or a 1.6 in. spacing between nops.

The cost of the finished yarn may be calculated as follows: 80.26 lb. woolen yarn at $1 per lb. = $80.26. 21.74 lb. cotton yarn at 70c per lb. = $15.22. The total cost of material in 100 lb. of the finished yarn is $80.26 + $15.22 = $95.48, and the cost per pound equals this number divided by 100, or $0.9548. To this figure must be added the cost per pound of labor and overhead, sales expense, and mill's profit allowance.

A Nomograph for Cotton Spinning

Provides simplified method of determining roll speeds and production

By S. V. MEHN*

MUCH TIME that might be put to other good uses is spent in making production calculations. Busy overseers and superintendents will find the accompanying chart a time-saver in figuring production on spinning frames.

To determine r.p.m. of front roll required to insert a desired twist per inch at a given spindle speed, lay a straight edge through the proper points on scales *A* and *B* and read the roll speed on scale *C*. The reading obtained is for a 1-in. diameter roll.

Production in cotton hanks for 10 hr. is found by a straight line from scale *C* to scale *E*, passing through the roll diameter on *D*. If the r.p.m. of front roll was found from the first three scales of the chart, the 1-in. roll diameter must be used here.

When a roll diameter is other than 1-in., the roll speed is found by laying a straight edge from *E* back through the actual roll diameter and reading the roll speed on *C*.

Production in pounds per spindle in 10 hr. is found on scale *G* by a straight line from the hank production on scale *E* through yarn size on *F*.

All production figures thus obtained are 100% and stoppage allowance must be included in finding actual values.

Dotted lines illustrate the use of the chart in determining roll speed and production. A spindle speed of 7,000 r.p.m. inserting 12 turns per inch requires 185 r.p.m. of a 1-in. front roll. This roll speed gives a theoretical production of 11½ hanks per 10 hr. (Scale *E*). If the front roll happens to be a 1½-in. roll, a line from 11½ on *E* through 1½ in. on *D* shows, on *C*, that the roll speed is 123 r.p.m.—equivalent to 185 r.p.m. of a 1-in. roll. If the yarn being spun is a 12s singles, a production of 11½ hanks in 10 hr. is equal to 0.95 lb. per spindle in 10 hr. as shown by scales *E*, *F*, and *G*.

Note: The original chart supplied by the author measured approximately 12x16 in. If 25 or more readers desire charts of that size and will so advise the Technical Editor, TEXTILE WORLD, 330 West 42nd St., New York, we shall be glad to have reprints made and supply copies gratis.

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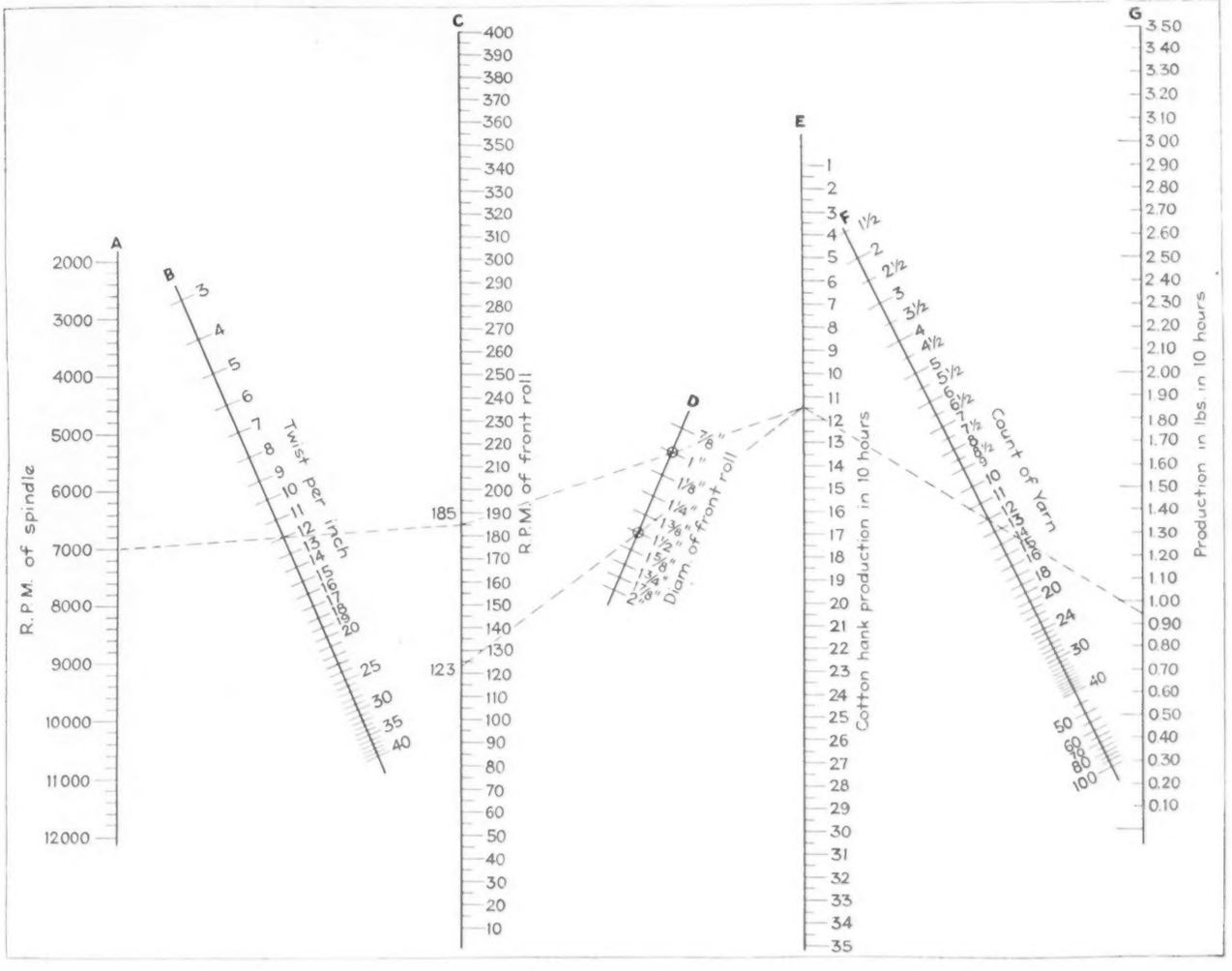


High-Speed Printing

300 yd. per minute made possible by new machine at Cranston Print Works

SPECIALIZING on dress goods, shirtings, and pajama fabrics, the Webster, Mass., plant of Cranston Print Works Co. has recently installed a new cloth printing machine with which it is possible to secure printing speeds ranging from 10 to 300 yd. a minute. With the new machine just emerging from a period of shake-down tests, there has been little opportunity as yet to make sustained, high-speed runs on the basis of which to cite actual production records. However, shorter runs of 100 to 300 min. indicate what is expected to become routine accomplishment. For example, typical runs made to date include: 10,049 yd. in an even 100 min., with four stops; 32,804 yd. in 352 min., with three color changes, for an average of 93.2 yd. per min.; 32,804 yd. in 272 min., for an average of 120.6 yd. per min.; 30,550 yd. in 10 hr., with six color changes.

The new printing machine was developed by Rice, Barton & Fales, Inc., and is designed, not only to permit higher printing speeds, but also to make possible continuous feeding of goods and backgrays, automatic control of tension of fabric entering the machine, accurate tracking of the goods, better registration, reduction in printing pressures, sharper printing with increased bloom, elimination of lapping and packs, easier means of changing blankets, increased mandrel life, and lower maintenance costs.

As can be seen from the diagram, the machine is made up of several sections which operate in synchronism. Each unit has its own individual driving motor, but pushbuttons at the printing end of the machine centralize control of all operations at the operator's finger tips. The cloth to be printed is first unwound into an accumulating conveyor, *B*, located midway of the backrigging. The conveyor permits building up enough cloth ahead of the printing machine to permit complete unwinding of one roll and attaching to its end the start of a fresh roll, thereby permitting continuous operation. From the conveyor the cloth is pulled into the printing machine, *A*. Next it goes to the dry cans, *F*, located on a balcony. From these the cloth is carried down and over the full length of the machine to a folder at the end of the line, where it is deposited in boxes or trucks, *E*.

The backgray is unwound from a roll and pulled directly into a J-box, *C*, which holds a surplus for continuous operation. A set of draw rolls takes the backgray from the J-box directly to the printing machine, from which it travels over the backgray cans, *D*. This arrangement may be used for either an endless or a continuous backgray. At the end of the run, as the last roll of cloth to be printed is being fed through the printing machine, the seam in the endless backgray is cut open and the backgray is wound up on a batcher.

The operator threads the machine either by running it at a low speed of approximately 10 yd. per min. by pressing a "run slow" pushbutton, or by jogging the machine at low speed through a "jog" pushbutton. Each time the "jog" button is pressed, the drive operates for a definite time interval and then automatically comes to rest. Next, the operator presses a "run fast" pushbutton which automatically accelerates the drive to a speed corresponding to the setting of a pre-set speed-selector rheostat on the operator's panel. Time for accelerating from threading to maximum speed is adjustable between 45 and 60 sec.

To bring the machine to a normal stop, the operator first presses the "run slow" pushbutton, and, after the drive has decelerated to the threading speed, he then presses a "stop" button to bring the drive completely to rest. Total time required for this is adjustable between 30 and 45 sec. In an emergency, pressing a "rapid stop" pushbutton, with the drive operating at any speed above the threading speed, will cause the drive to stop in 4 to 7 sec. To slow down for inspection or correction of printing difficulty, the operator presses the "run slow" button, which automatically decelerates the drive to minimum speed. Re-acceleration is obtained by again pressing "run fast".

MECHANICAL CHANGES. Some of the more important details of the mechanical redesign of the machine installed at Webster are: The frames, which are of heavy construction to absorb vibration at high speeds, have been designed with open side nips for the application of anti-friction bearings. The printing machine cylinder, rubber-covered to do away with lapping and packs, is carried in anti-friction bearings. Mandrel bearings are self-aligning, with endwise adjustment made from one end of the mandrel, thereby allowing for expansion and contraction. Doctor bearings are all of the needle type, mounted in special doctor steps.

Color pans and furnisher rolls are of a special type for retaining the color during high-speed operations. A new type of universal-driven revolving spreader is employed for both the fabric and the backgray. All carrying rolls are brass, carried in anti-friction

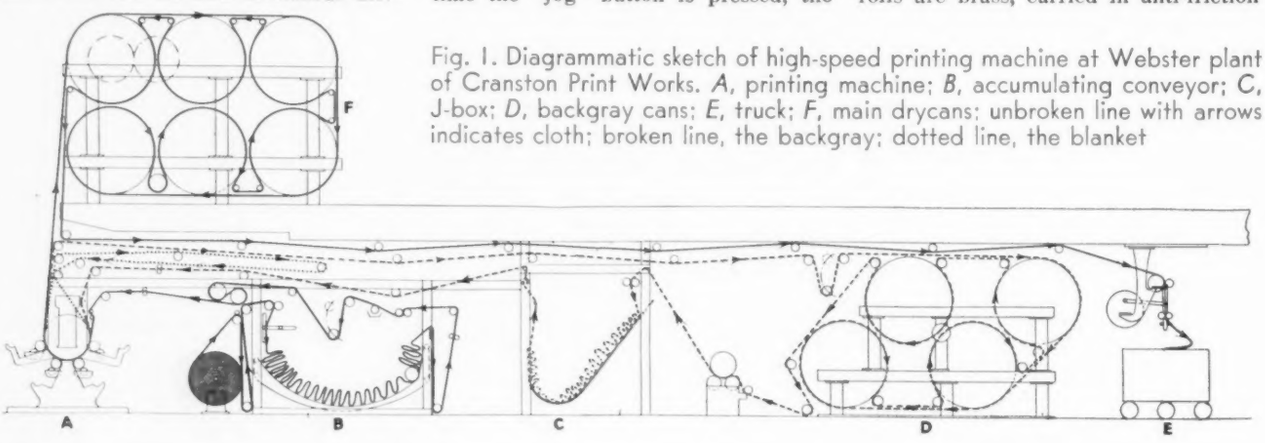
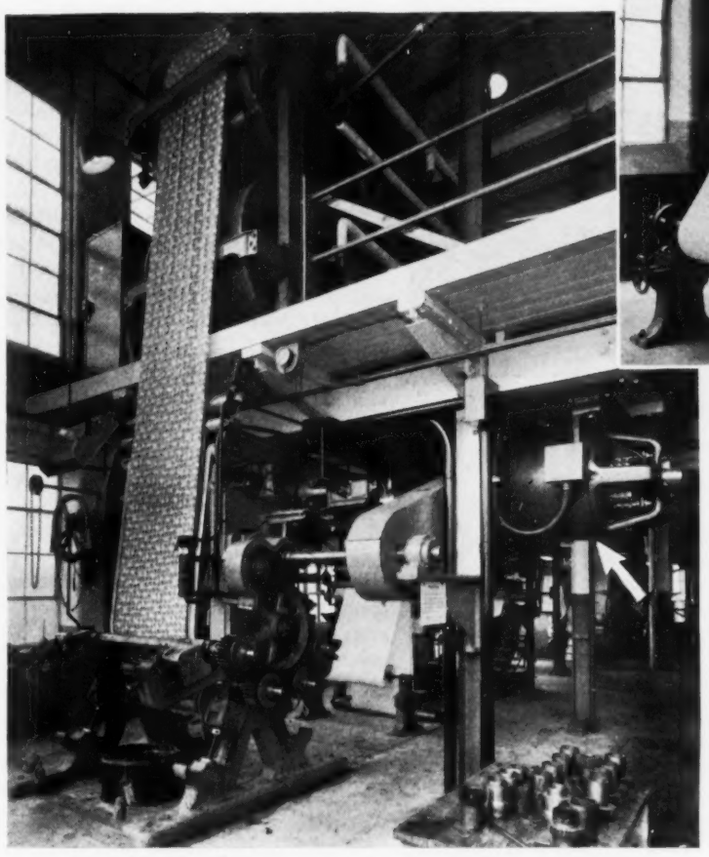


Fig. 1. Diagrammatic sketch of high-speed printing machine at Webster plant of Cranston Print Works. *A*, printing machine; *B*, accumulating conveyor; *C*, J-box; *D*, backgray cans; *E*, truck; *F*, main drycans; unbroken line with arrows indicates cloth; broken line, the backgray; dotted line, the blanket

Fig. 2. General view of high-speed printing machine; note main dry cans located in balcony; arrow indicates main driving motor which is connected through chain and gears to the several engraved rollers



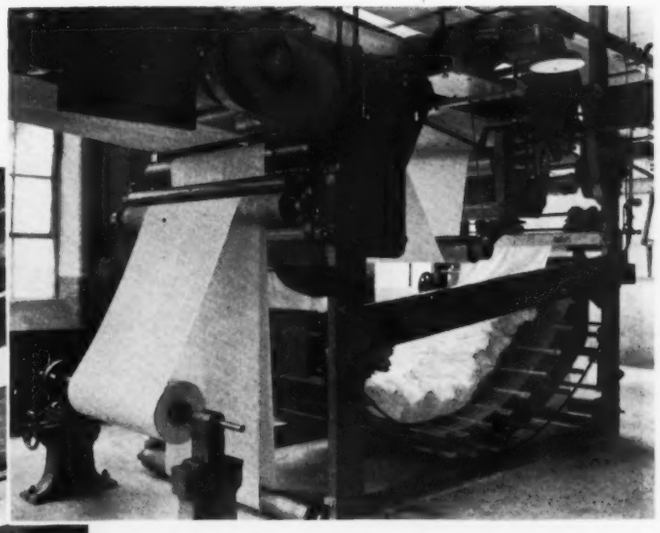


Fig. 3. Accumulating conveyor permits continuous printing; the several motors on the back-rigging operate on a variable-voltage circuit from a separate back-rig generator with basic synchronization of machine maintained by a differential interlock system

bearings, and dynamically balanced for a printing speed of 300 yd. per min. Star gears are all carried in anti-friction bearings and are readily changed for a change in circumference of printing rollers. Lubrication is positive on all rotating parts. Through use of a special housing, a blanket can be installed without taking off the cylinder bearings. Dry cans for fabric and backgrays are carried in anti-friction bearings and are equipped with a siphon system to remove condensate.

The motor drive and controls for the new machine at Webster were furnished by Reliance Electric & Engineering Co. The main motor drive uses a combination of variable-voltage and field-control methods for obtaining the wide speed range. In addition to the main motor which drives the printing machine itself, individual section motors are applied to the Nos. 1 and 2 pull rolls, the tension rolls, the backgray cans, the batcher, the main cans, and the folder.

The fitting gears on the several engraved rollers mesh with a central star gear. Power is then transmitted to this train through a pinion mounted on a driving shaft connected to the driving motor by chain and sprockets. A movable intermediate gear connects the driving shaft to the star gear to insure perfect gear mesh and to obviate disturbing the main driving shaft. There is no mechanical connection between the main drive and the larger cylinder, as this rides freely on its bearings.

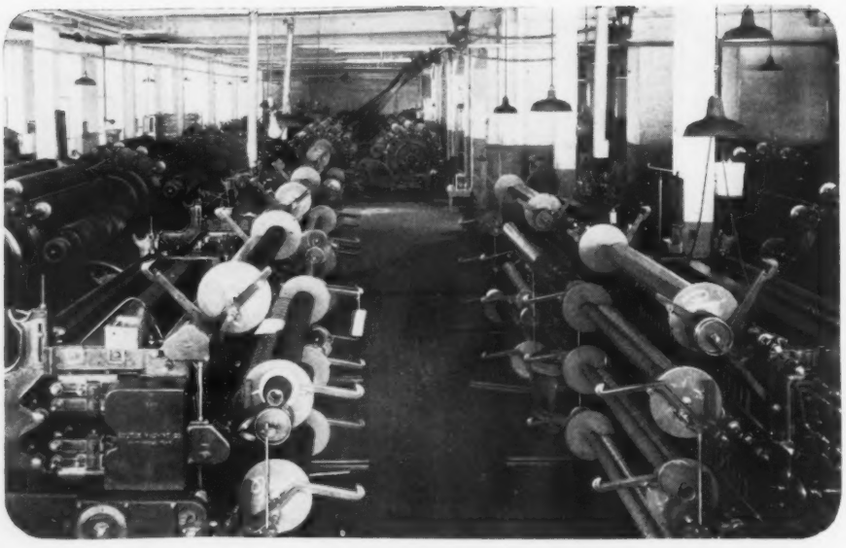
Particular attention has been given to the maintenance of uniform tension in the cloth, regardless of the speed at which it may be carried through the printing machine. The motor for the main dry cans is the "master" or "lead" section of the drive and operates from an auxiliary, backrig generator. Tension between other back-rig sections is controlled through manually-operated rheostats or dancer-roll rheostats, and in some cases through an automatic current regulator. The rheostat actuated by a current regulator maintains an even tension on the cloth just before entering the printing machine. A similar arrangement has been made for the control of tension in the travel of the backgray. Its rheostats keep the backgray cans in proper speed relationship with the printing machine.

The several motors on the back-rigging operate on a variable-voltage circuit from the separate back-rig generator, with basic synchronization of the printing machine maintained through a differential interlock system. A printing machine roll that indicates definitely linear speed drives one part of the differential system and the motor on the main cans drives another part. Any difference in linear speed between these two sections results in the third part's moving instantly to correct the draw. At any time the operator can easily adjust the draw between the printing machine and the main cans by using a draw control switch located on the operator's panel.

A low-voltage, auxiliary generator supplies power to the main printing machine motor for jogging and running at minimum speed. When the "run fast" button is pressed, the motor-operated rheostat simultaneously increases the voltages to the several motors. At a pre-selected voltage point the main printing machine motor is transferred to the main generator.

An oscillator motor is interlocked through magnetic control to start and stop with the range drive; but operates from the constant voltage supplied by the exciter. It has no speed relationship with the range drive, its speed being adjustable separately through a manual rheostat.

As a safety measure, it has been arranged that the tripping of any overload relay in the system will immediately shut down all range and auxiliary motors.



Resetting woolen cards one after another in regular sequence will eliminate many of the overseer's troubles

Managing Woolen Cards

Made easier by developing routines for setting, stripping and maintenance

By P. P. TOWNEND

THE CARDING OVERSEER'S work is to insure that all machines are kept running, but quality of product should have priority over quantity. It is better that a machine which is turning out faulty roving be stopped and the trouble remedied, rather than that it be allowed to continue to make spinning difficult and poor yarn for the weaver. It is only by constant supervision of every roll that such results can be avoided. It is essential that machines be gone over systematically instead of waiting until such time as a cylinder becomes coated or the roving has become twitty. The overseer might start at No. 1 card and work through the entire group by the time the first one requires resetting. This cycle of setting one machine after another in a regular manner is not so simple as it might appear, since overseers have many other jobs to do in the course of a day, but there is no doubt that the system will eliminate many troubles.

The time which elapses before a machine requires resetting depends on the condition of the machine, the type of work being processed, and the building in which the machinery is housed. Obviously, old machines require more attention than modern sets, although some mills can tolerate limited irregularities in yarn diameter, depending on the goods to be produced; e.g., carpet and blanket yarns need not be so regular as those intended for fine woolen suitings.

The value of keeping records cannot be overestimated. The date on which each machine was gone over, the weight of each blend before carding, the weight of spun yarn, the weight of light-fly collected during card stripping, the weight of heavy, greasy strippings, and the weight of waste made during spinning should be noted. From such figures useful information can be gained as to whether or not a blend lost much weight, which gives a pointer as to the working condition of the machine; this is especially the case in the matter of weight of stripping waste. If this figure seems high, it is an indication that something may be wrong with the machine or the blend.

Card strippers are too frequently looked upon as a necessary evil, and the class of workmen employed is often poor. Good strippers are well worth keeping, for on them depends the life of the cards. The men should be taught to strip parallel with the end of the cylinder in order to disarrange the teeth as little as possible. If the reason is pointed out, it is far more likely that the method will be followed. Further, they should be encouraged to tell the overseer if any roller is wrapping, even if it has already been seen by the overseer. The time will no doubt arise when he will miss such a roll. Strippers can be told the price of covering the various rollers with cards, and why it is better that their cushions should be well padded to prevent them pressing the card wire down. If a man is made to realize that his job is important and influences the product, he is more likely to become a better workman.

The management, might, however, emphasize that while strippers are working on a machine, production is lost, so that since they have the same amount of work to perform per day, it is better for all concerned if they can get on and off machines as soon as possible, providing always that no work is skimped. The time and day when each machine is stripped should be chalked on the hopper side, so that the head stripper can look around and give the overseer an idea as to which machine was stripped last. In this respect no strict sequence is possible, since it is usual to strip machines when a lot has run out. Of course, the quality and color of the next lot will influence this latter point.

Records should be kept of the card clothing on each roll, together with the date on which the roll was covered, and any remarks which may be made at the time regarding such things as the foundation, the name of the maker, etc. These notes will prove very useful in later years when re-ordering. It is hardly possible to remember all the details, and by noting how the present roll has worked it is possible to order a replacement more easily. Such a method also facilitates making any slight alterations felt to be desirable. A sample of every piece of card wire used should be kept and ticketed, especially if no other record is kept, as it is very difficult to state the exact count and crown of a card after it has been running several years. Such records should be kept by the office as well as the overseer, so that should the overseer leave, the data are there for reference.

It is not good practice for a spinning overseer to dictate the dimensions of any card clothing unless he is prepared to work it himself. What one overseer would condemn as unworkable, another man on the same type of material will work very satisfactorily; especially is this the case with fancies. If an overseer is convinced that a certain count and crown on a fancy will clear a swift, he will usually succeed in doing it, even though by all the rules of theory it is an impossibility.

Abstracted from *Textile Manufacturer*.

Inefficient Open Wiring Eliminated

Bus-bar feeders provide flexible system of electrical distribution for mill

By FRANCIS A. WESTBROOK

EVERY YEAR the management of Kezar Falls (Me.) Woolen Co. modernizes a part of the mill equipment—selecting the details that call loudest for attention. With this policy, they find it possible to carry on a progressive rehabilitation which calls for a comparative small outlay at any one time, but which keeps the mill in first-class shape. Many such replacements can, of course, be made during slack periods or seasons and so interfere very little with orderly operation. The continuous modernization policy of this company and the beneficial effects of it were discussed by this writer some time ago in TEXTILE WORLD. The mill makes a good grade of woolens, using virgin wool, noils, and garnetted stocks as raw materials.

The most recent phase of the modernization program was the elimination of much of the complicated, unsightly, and old-fashioned open wiring in the plant by installation of Trumbull Electric Mfg. Co. system of bus-bar and Flex-A-Power electrical distribution. The bus-bar feeders on the ceilings of the basement and second floors are shown in the accompanying diagram (Fig. 1). For the basement the three-phase feeders are rated for 750- and 500-amp. Leads are taken off for the motors on this floor for the finishing and dyeing machines. Plug connections are also taken off for the loom motors in the weave room on the first floor, the leads passing up through the floor. Four 200-volt, 1½-hp. loom motors are served from each plug by means of three-phase Twistlock plugs and receptacles. Two floors are thus served by one feeder.

There is a bus-bar riser to the second floor, which supplies the feeder on that floor. This takes care of the second-floor card motors and other motors on the third floor, the leads passing up through the ceiling as in the basement. The photograph (Fig. 2) shows the bus-bar distribution in the basement of the mill.

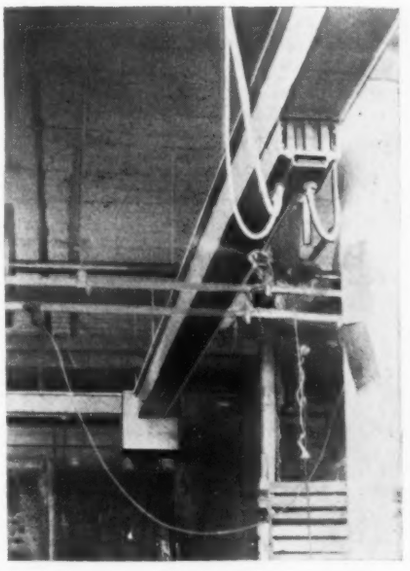


Fig. 2. Bus-bar distribution in basement, showing plugged-in connections for looms on floor above and, in background, arrangement for a right-angled turn in main feeder; note also method of suspension from ceiling

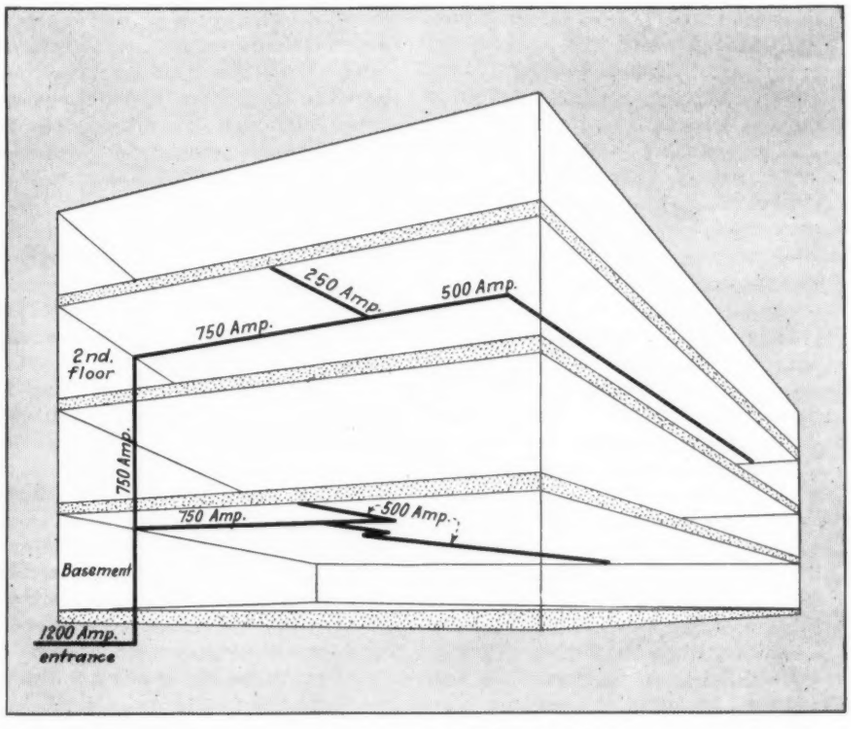


Fig. 1. Diagram showing arrangement of bus-bar feeders on ceilings of basement and second floor

When this system was installed, it was made large enough to provide against the probability of its being outgrown. It was selected because of its great flexibility, for one thing, as it gives opportunity for an outlet at least every 2 ft. As old machines wear out and new, more efficient types are developed, it is necessary to make replacements and to change the location of motors. With this kind of electrical distribution it is a comparatively simple matter to handle such changes. In addition to this, it is easy to extend the feeders with standard sections to any part of the plant where they may be needed. The minimizing of hot lugs and bad connections, with the consequent simplification of maintenance were other considerations influencing the selection of this installation. The electrical superintendent of the plant stated that it has been fully justified by the greatly reduced outage time of the machinery so served.

Increasing Filter Efficiency

By proper care, thorough backwashing, and chemical methods of cleaning sand

By HUDSON NIX

One phase of the treatment of water for process work and other purposes in textile mills which has received less attention than it deserves is the care of sand filters. The following article discusses the principal factors affecting the efficiency of filters and describes in some detail the measures which should be taken to avoid difficulties and to correct troubles if they occur. Particular stress is placed on proper methods of backwashing and on cleaning of sand by the newer chemical processes

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THE SAND FILTER BED in a water treatment system is generally thought of as a permanent piece of equipment, simple to operate and free from breakdowns. The fact that this is true very often leads to a neglect of the simple precautions necessary to keep the filter delivering an effluent of maximum purity and clarity. A knowledge of the general conditions affecting the efficiency of a filter, as well as attention to unusual conditions in individual systems, will result in increased efficiency from a water-purification plant, in addition to avoiding annoying and expensive trouble.

It is the purpose of this article to discuss the principal factors affecting the efficiency of filters and the methods generally used to correct troubles.

The performance of a filter is influenced by the effectiveness of pre-treatment of the water to be filtered, the rate at which the filter is operated, and the condition of the sand and underdrain system. The latter is determined largely by the thoroughness of the backwashing process, which is the most important factor in filter maintenance.

The conventional rate of wash water of 15 gal. per sq. ft. per min. may not always effectively remove silt and deposited material from the sand grains. If this is not done, clogged areas in the bed and underdrains are likely to occur. A more satisfactory guide to the effectiveness of the washing operation is the expansion of the sand, which should rise 40 to 50% above the normal level during washing. This means that sufficient water should be used to bring a 24-in. depth of sand to a depth of 30 to 36 in. during the washing process. When the water is cold and viscous, the normal 15-gal. rate will accomplish this, but when the water reaches a temperature of 70° F., or higher, a wash water rate of 20 or even as high as 30 gal. per sq. ft. per min. will be needed to produce the necessary sand expansion. This expansion can be measured easily by the use of a calibrated rod or small pipe to which is attached an electric light bulb equipped with waterproof socket and cable, lowering the device until the light comes in contact with the sand.

In numerous filter plants, however, there is no provision for such increased wash-water rates. In such cases, recently developed surface wash systems can be utilized with good effect. The Baylis surface wash system and the Palmer "filter sweep" apparatus, for example, have both demonstrated their value in a number of plants throughout the country. The Baylis system consists of a number of perforated pipes suspended about 4 in. over the sand bed, through which jets of water impinge on the agitated sand grains and greatly increase the effectiveness of the scrubbing action produced by normal backwashing. The "filter sweep" makes use of a revolving pipe with similar jets. These systems require no more than 5 to 8 gal. per sq. ft. per min. to give an effective wash under extreme conditions with normal backwashing.

In instances where existing facilities are inadequate at certain intervals, and yet where the situation occurs too infrequently to justify the installation of surface wash equipment, the use of a high-pressure hose on the sand during washing is very helpful. This is most effective where a long pipe is installed on the end of the hose, and a jet on the end of it is moved through all sections of the sand while the bed is being washed. If this does not produce a satisfactory result, the water may be drained below the surface of the sand and the high pressure hose used to cut the embedded sand, dissolving mud balls and thin layers of mud not removed by the first washing. In such action, a second short wash becomes necessary.

During washing it is well to observe the action of the back-water through the sand to determine if the flow is evenly distributed through all sections of the bed. An uneven flow of back-water indicates broken or clogged strainers or underdrains, or sometimes large accumulations of caked mud between the layers of sand and gravel. Periodical tests of the different layers of the sand should also be made. This is easily accomplished by the use of a sampling tube, which can be made by sawing open a short section of pipe, 1 or 2 in. in diameter, and fastening the pieces together on one end with bolts. To sample the sand, the water is lowered from the sand bed, then the pipe is inserted into the sand with the bolts loosened, and next the nuts are screwed down on the bolts to hold the sample firmly while the pipe is withdrawn. Several samples should be taken from each filter and should be examined for mud balls, organic matter, biological slime, iron, and manganese. Presence of any of these in appreciable quantities, especially if the sampling was made after backwashing, portends trouble in the future operation of the filter. Short filter runs before washing is necessary or the passage of floc through the bed usually indicate one or more of these conditions.

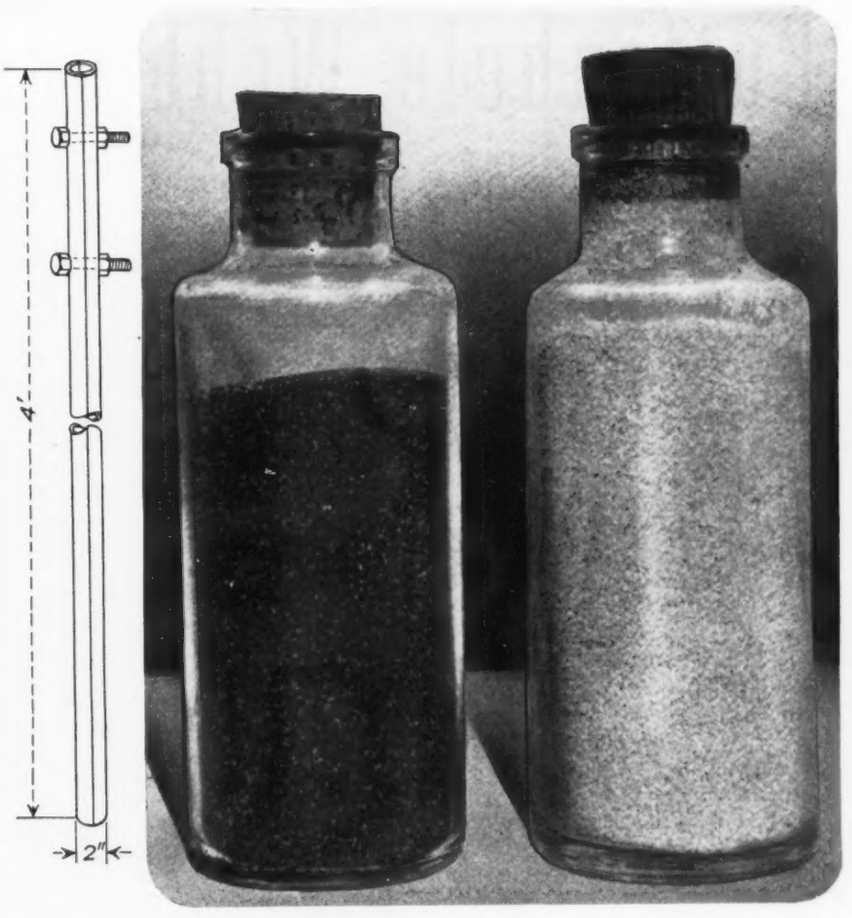
CLEANING THE SAND. One or more of these troubles is likely to occur eventually in every filter plant to the extent that a cleaning of the sand becomes necessary. Until a few years ago, this was done by removing and cleaning the sand with ejectors and sand washers; but due to the labor required and the long period the filter is kept out of service, this method is now being abandoned in favor of cleaning by chemical treatment. Caustic soda, chlorine, sulphur dioxide, and sodium bisulphite have all been used for this purpose. The caustic soda method is perhaps the most widely used. Recently, however, the effectiveness of the sulphur dioxide process has been shown by plant demonstrations in Maryland, New York, and other States.

In applying the caustic soda treat-

ment, the filter is washed thoroughly with the regular backwash. From 1 to 2 lb. per sq. ft. of caustic soda is then added to water standing 12 in. above the top of sand. When this is dissolved, the waste valve is opened and the solution is drawn into the sand bed until the level of the solution is 1 in. above the sand. This is allowed to stand for a period of from 12 to 24 hr.; then the filter is washed very thoroughly and placed back in service. Samples may be withdrawn during this soaking process and rinsed to determine the steeping period required to clean the sand. Several backwashings may be necessary thoroughly to remove the caustic soda from the sand, and this operation is greatly facilitated by the use of a hose on the sand bed after each washing. This will also insure a thorough removal of all the loosened organic material and incrustants from the sand. Sodium bisulphite is applied in the same way as is caustic soda.

APPLICATION OF CHLORINE to filters is recommended chiefly to destroy algæ and slime organisms in the sand, or when the sterilization of the bed is desired. This may be done by adding doses of 1 to 2 parts per million of liquid chlorine to the wash water, or it may be applied directly to the sand bed in the form of chlorinated lime. From 4 to 8 lb. for each 100 sq. ft. of filter surface is recommended, although doses even twice this amount may be required in extreme cases. This is added to water and drawn into the sand in the manner described for caustic soda.

The sulphur dioxide method has been developed and patented by the West Virginia Pulp & Paper Co. and is recommended especially where operators are troubled by waters containing large quantities of iron or manganese, which deposit hard brownish black coatings on the sand grains. This method of cleaning employs the introduction of liquid gas sufficient to make a 2% solution into the bottom of the filter bed through a connection made in the filter effluent. The gas is raised and diffused through the gravel and sand by allowing water to follow slowly through the backwash system until the sand is covered by the solution. It is allowed to stand until tests by sampling reveal that the incrustants are sufficiently loosened to be removed by backwashing. A steeping period of from 6 to 12 hr. is usually required. Several backwashings are usually necessary to remove the chemicals and dislodged foreign material from the sand bed. Some mechanical agitation or stirring during the washing and soaking period hastens the cleaning action, sometimes making possible a thorough wash with no more than a 1% chemical solution.



At left. Device for sampling filter sand. It is made by sawing open a 3- or 4-ft. section of pipe. The bolts holding it together are loosened 1/4 to 1/2 in. before the opposite end is inserted in the sand. Bolts are tightened before device is withdrawn. Device may be pushed down until it reaches the gravel, showing condition of every layer when withdrawn

At right. Sand before and after chemical treatment. In this case sodium bisulphite was used to remove coating of iron and manganese

After backwashings, the filter should be operated by opening the waste valve, allowing the filtered water to flow to the sewer until tests reveal the effluent to be free from the chemical used for cleaning. It is good practice to remove the effluent valve and block of the filter from the clear-water mains by the use of a flange in order that a leaky valve may not contaminate the water in the mains or reservoir. While the filter is out of service, valves may be removed and inspected for the need of repair. Unseen leaks in rewash and sewer valves may run into appreciable losses of water in the course of months and years of operation.

THE COST OF CLEANING a filter bed of 1,000,000-gal. daily capacity may be expected to run from $60 to $100, depending upon the condition of the sand and other factors which vary with locations and operating conditions. The advantages that may be expected from chemical cleaning over the mechanical method are sterilization of all sections of the bed and underdrains, clogged ports are unstopped, and the interior deposits in the drain pipes are removed. One man can handle all labor the operation requires, and the filter is out of service no longer than 24 or 48 hr., compared to the usual week required by removal and cleaning with the mechanical method.

While the chemical cleaning or removal of the sand has long been thought of as inevitable, men in charge of water-treatment systems are now concerned with the prevention of the conditions that make expensive cleaning necessary. Slime and algæ may be inhibited by chlorination in conjunction with coagulation and sedimentation, or by the application of copper sulphate to impounding reservoirs. This, together with effective coagulation and backwashing, will go a long way toward eliminating troublesome and expensive shutdowns for cleaning.

Buttonhole Webbings

Light-weight materials made on narrow fabric looms have wide variety of uses

By EDWIN J. GIBBONS*

UNIFORM BUTTONHOLES, perfectly shaped, of almost any length, can be incorporated in practically any lightweight narrow woven fabric, provided always that the buttonholes are formed lengthwise of the material. Twice the number of harnesses usually employed for a given weave are required, and throughout the section where the buttonhole is to be formed two separate sets of sheds are necessary. Very small buttonholes may be incorporated with the use of a single shuttle, but ordinary size buttonholes require two shuttles for each tape.

Fig. 1 shows a narrow woven fabric in which a small buttonhole has been incorporated by use of a single shuttle. This type of webbing is usually employed in connection with a hook similar to the hook-and-eye type, or for other specialty work. Fig. 2 illustrates the weave, harness- and chain-drafts and reeding plan. The first two picks in the design represent the plain part of the fabric; hence, the number of repetitions of this section will determine the spacing between buttonholes.

Where only one shuttle is employed, the filling interlaces with all the warp ends to form the full width of the body of the material for the length of the space between the buttonholes. At the buttonholes, the filling interlaces with only one-half the number of warp ends (provided the opening is to be placed in the middle of the fabric), while the remaining ends are raised or lowered out of the way. After one side of the opening has been formed, the warp ends constituting that part of the webbing are, in turn, raised or lowered out of the way, and the remaining half of the ends are set into operation to form the other side of the opening. In some cases it is advisable to weave half the first side of the opening, then the entire opposite side, before completing the remaining half of the first side.

Twice the number of picks per inch in the plain part of the fabric will be required throughout the length of the buttonhole, since in this section each pick travels only halfway across the material. It is therefore necessary to raise the pawl at the pick gear while weaving half of the picks in the buttonhole. At *A* in Fig. 2 is shown one method of accomplishing this. Whether the pawl should be raised while making the first side of the opening, or the second side of the opening, or the second half of the first side and first half of the second side, depends greatly upon the texture of the fabric. In either case, extreme care is required in the choice of the proper side springs and back springs of the shuttles, and in adjusting filling tensions.

CARE SHOULD BE TAKEN that always on the first pick forming the buttonhole the interlacing begins at the outer edge of the fabric, and from the side of the tape on which the shuttle came to rest on the preceding pick; in other words, just as if a full-width pick was about to be inserted. When it is desired to change from weaving one side of the buttonhole to the other, the shed should open across the entire warp, and in such a manner as to cause no break in the weave at either side. Also, after the last pick of the buttonhole has been made, the shuttle should be in position to insert the first pick of the plain section of the fabric.

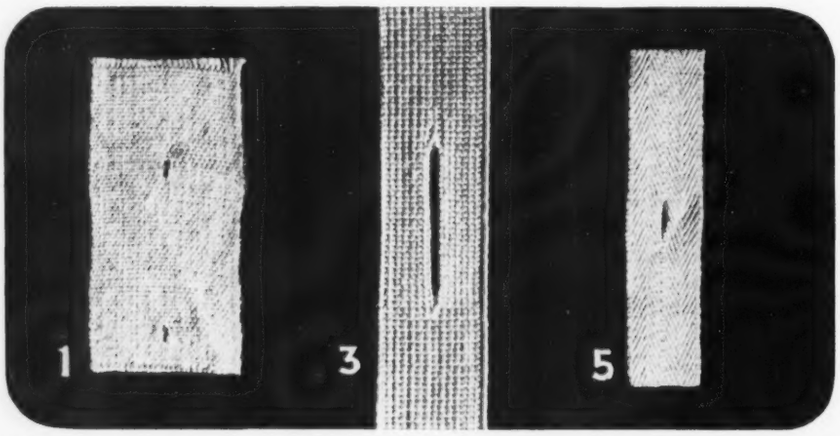
It will be readily understood that single-shuttle buttonholes must necessarily be small. Otherwise the tape will be distorted in the sections in which the pick gear has been manipulated.

When two shuttles are employed in construction of buttonhole webbings, there is a choice of two methods. Use may be made of a drop-lay loom, in which separate sheds can be formed alternately and the shuttles operate successively. Or, a so-called buttonhole loom may be used; in this, two separate sets of sheds are formed simultaneously and both shuttles are operated at the same time.

Fig. 3 shows a buttonhole webbing made with two shuttles in a drop-lay loom. The picks were inserted in two-and-two order. This rayon-filled webbing is commonly used in lightweight summer suspenders, to replace the usual leather or braided ends. It is made in pastel shades.

Fig. 4 illustrates the weave, harness- and chain-drafts, and reeding plan used. At *A* is shown a method by which the pick-gear pawl can be raised on alternate picks throughout the length of the buttonhole. The dots in the design represent the binder ends, and the crosses show when the ends forming the left side of the opening are raised over bottom-shuttle picks. Throughout the buttonhole, the shuttles operate in two-and-two order. Each weave is repeated as many times as is necessary.

When the drop-lay method is employed, one shuttle (usually the top one) interlaces with all the warp ends to form the full width of the body of the fabric for the space between the buttonholes. At the buttonholes the top shuttle interlaces only with the ends forming one side of the opening. The bottom shutle, which has remained idle while the top shuttle was weaving



Figs. !, 3, 5. Three types of narrow fabrics with woven buttonholes; construction details are shown on opposite page

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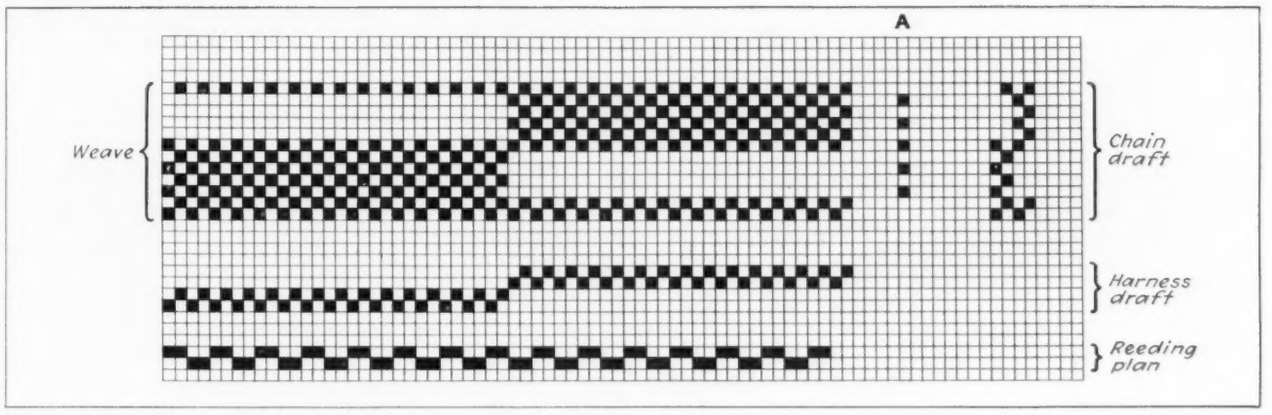


Fig. 2. Weave, drafts, and reeding plan for buttonhole webbing pictured in Fig. 1

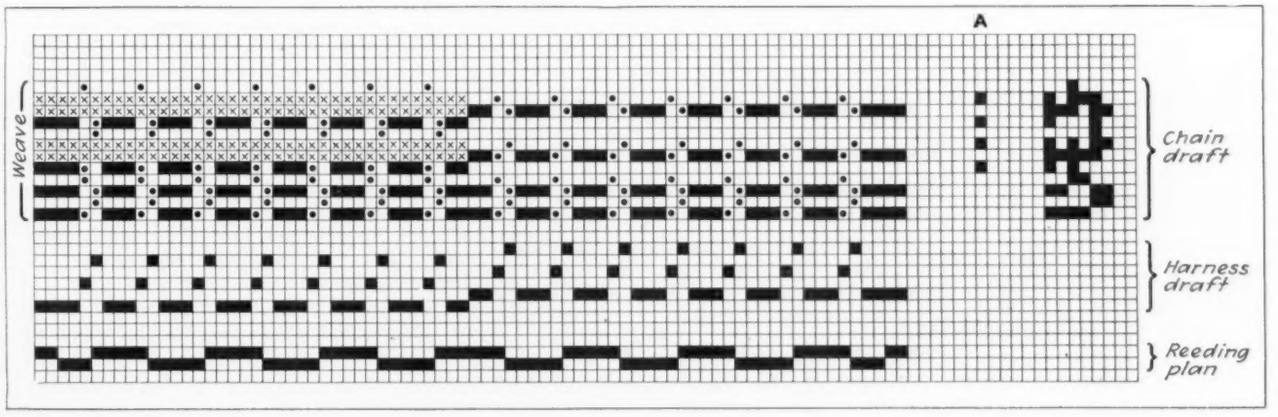


Fig. 4. Design data for producing the webbing illustrated in Fig. 3

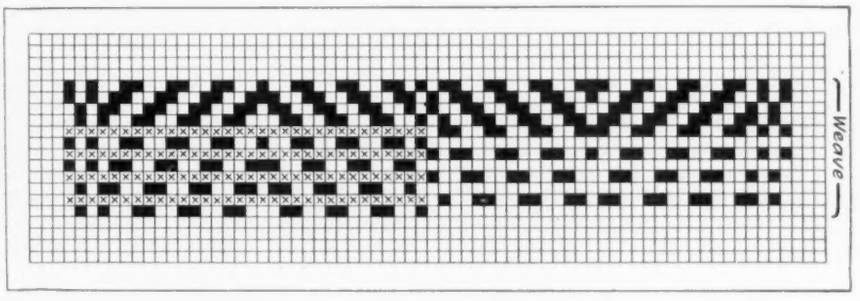


Fig. 6. Weave design used to form buttonhole webbing shown in Fig. 5

the space between buttonholes, at the same time forms the other side of the opening, usually alternating pick-and-pick, or in pairs of picks, with the top shuttle. During weaving of the buttonhole the take-up roll of the loom should be advancing at only half the speed at which the plain part of the fabric was woven. This can be effected by causing the pick-gear pawl to be raised on alternate picks.

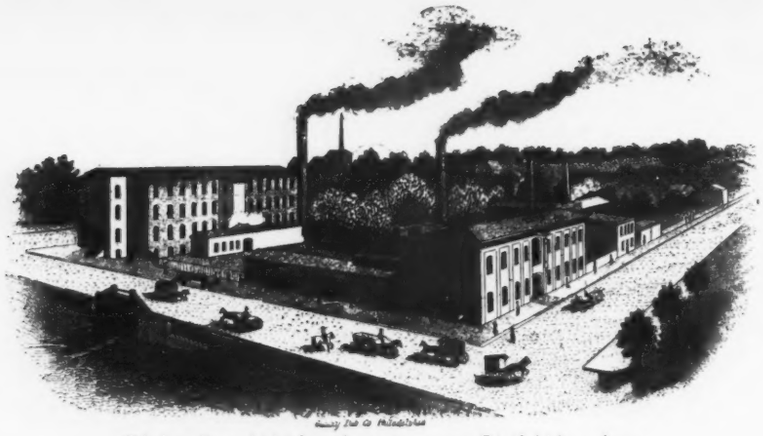
In this case also, the first pick of each buttonhole should be formed by the top shuttle, beginning at the outer edge and interlacing from the side at which it was left after completing the previous pick. The bottom shuttle, on the contrary, must interlace on its first pick from the inner edge of the buttonhole, and, consequently, from the same side from which the top shuttle started on the buttonhole. When the top shuttle has formed the last pick of its share of the buttonhole, it must always come to rest at the same edge from which it started to form the opening. In other words, it must be in such a position that it will be ready to insert a full-width pick at its next movement. After the last pick inserted by the bottom shuttle, the bottom filling should hang freely from the points of the buttonhole, provided, of course, it is not being bound into the back of the fabric.

Fig. 5 shows a narrow buttonhole web interlaced in a twill herringbone order. This light-weight, but fairly durable, buttonhole webbing is employed mostly in combination with small ivory buttons on lingerie. As illustrated in the design, Fig. 6, the two shuttles operate in one-and-one order throughout the entire fabric. The crosses in the design show when the ends served by the top shuttle during formation of buttonholes are raised over bottom-shuttle picks.

As the transition from one weave to the other is immediate in the designs shown in Figs. 4 and 6, both of these may be made on either a double-cylinder, repeating-chain head loom or on a single-cylinder dobby head which is equipped with a repeater attachment.

If the harnesses can be spared, it is possible and often advisable to reinforce buttonholes at both ends of the opening. This is effected by causing the filling from one shuttle to wind about a few of the central warp ends several times just before and just after forming the buttonhole proper. This feature, however, may only be incorporated in buttonhole webbings made on jacquard looms, or possibly on chain-head or dobby-head looms when the repeat of the design is very short. The regular buttonhole loom, operating as it does by cams, does not lend itself to this feature.

(*Mr. Gibbons' discussion will be concluded in an early issue.*—Editor)



Globe Dye Works plant in post-Civil War days

A Civil War Baby

Reaches age of seventy-five; Globe Dye Works celebrating its diamond jubilee

AFTER THE CIVIL WAR in the United States, as after every war in every country, there was a period of reconstruction. New companies were formed, new plants were built, as business took up where it had been forced to leave off. As always, some of these enterprises soon disappeared from the scene, while others achieved lasting success. The difference lies, perhaps, in two things: whether the service the firm offers is needed, and whether the management is progressive-minded. One company, which started just at the close of the war between the States and which has won success by everlastingly keeping in mind the two factors mentioned, is Globe Dye Works, Kinsey and Worth Sts., Philadelphia, which this month celebrates its 75th anniversary.

The accompanying illustrations give an idea of how change has affected the exterior appearance of the company's buildings—the small cut shows the original plant, while the larger photograph is a view of a portion of the 1940-model mill. The real story, of course, lies inside the plant—in changes in methods of dyeing, dyes available, machines used, and yarns to be dyed.

When Richard Greenwood and his partner, a Mr. Bault, launched their venture, dyeing was largely a hand operation. Available dyestuffs were few. Dyers were forced to prepare their own dyes from crude materials. In those old days, Globe used great quantities of indigo blue, as well as logwood by the carload. Richard Greenwood, in fact, was recognized as a capable "logwood doctor" and he was often called in as a consultant on "sick" logwood vats. Warp and skein dyeing and bleaching of cotton yarns accounted for the bulk of the company's business at that time.

TODAY, the picture is quite different. Two grandsons of one of the founders now carry on the business. They are Horace T. Greenwood, Jr., president, and Paul Greenwood, treasurer and superintendent. Modern, efficient machines have for most purposes supplanted hand methods, although for some processes, in which no machine has been found to yield equally good results, hand operation is still the rule.

More than 50% of Globe's work now consists of package dyeing. As this branch of the business has increased in importance, machine after machine—each incorporating latest improvements—has been installed. The first package dyeing machine was obtained in 1934. Another went in in '35, two more in '36, and one each in '37 and '38. All these machines are stainless-steel clad. In 1939 a group of four all-stainless-steel machines was added, thus putting the number of package-dyeing units now in place at ten. Capacities of the machines range from 100 to 500 lb., and two of the 500-lb. machines are so interconnected that a 1,000-lb. batch can be dyed at once, with the same liquor, thus assuring accurate shade matching.

Other processes which are carried out in large quantities are skein dyeing, bleaching, and warp dyeing. Globe's present capacity is approximately 75,000 lb. per week of package dyeing and a like quantity of skein and warp dyeing.

Synthetics, of course, are an increasingly important factor. The company started its experimental work with rayon dyeing as far back as 1920, and for the last eight years it has been handled in volume. Recently, successful experimental work on dyeing Nylon in regular rayon equipment has been under way.

Keeping up-to-date has also been the rule in auxiliary facilities. For instance, in 1931 service and control laboratory facilities were added. Modern water-softening equipment was installed in 1935. In 1936 new machinery for winding from packages to tubes, cones, or quiller bobbins was put in place, and since that time other new winding equipment has been installed.

Over the years Globe's fame, and the number of products made from yarns it dyes, have grown together. The latter now includes yarns for drapery and upholstery fabrics, sweaters, polo shirts, bathing suits, hockey caps, knitted gloves, neckties, turbans, fringes, mops, tapes, labels, slide fasteners, braids, bath mats, towels, dish cloths, pot holders, and other items.

These buildings house Globe's up-to-date dyeing equipment

FIXING HOSIERY MACHINES

CIRCULAR MACHINES—Chapter III. Systematic Lubrication

By JULIAN W. HUGHES

CORRECT LUBRICATION of every working part of circular hosiery machines is vital to smooth operation. The modern knitting machine is a complex mechanism which requires expert attention. Therefore, the duty of oiling should not be assigned to a learner or any irresponsible person. Logically, the fixer should have the responsibility for lubricating the machines that he must maintain. It is equally important to use lubricants of good quality and the proper viscosity. The best fixers insist on lubricants supplied by well-known and reputable companies who understand the operating conditions under which their products are to be used. Lubricating oils of unknown brands should be carefully investigated, especially if sold with liberal discounts or premiums.

For needles, sinkers, jacks, gear sleeve and dials, Scott & Williams recommend a stainless oil having a viscosity of 320 sec. Saybolt at 100° F. For shaft bearings, slide and swinging cams, levers, etc., a somewhat heavier oil, having a viscosity of 300 sec. at 100° is recommended. However, as a fixer seldom has access to a Saybolt viscosimeter, he must depend upon the reputation of the dealer.

It seems to be the practice of most oilers, or fixers who oil their own machines, to start oiling when they first come on the job at the beginning of their shift. This is satisfactory for the second-shift men, where the machines have been running all day. On the first shift, however, if the machines have been standing idle for several hours and are cold, it is better for the fixer first to check the sizes to see that each machine is knitting accurately. By the time he has finished this job, the machines will have warmed sufficiently to receive lubrication.

Needles are oiled while the cylinder is in motion, preferably during the time it is revolving. If the oil is applied while the cylinder is oscillating to knit the gore, the lubricant will not be so uniformly distributed and, if the machine is equipped with a wrap-yarn stand, the wrap yarns may become soaked and not feed normally.

The oil can is still used to a considerable extent for oiling the needles, the oil being squirted on near the top

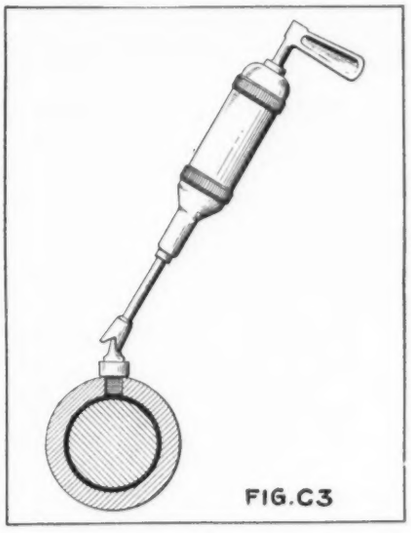


Fig. C3. Shaft and stud bearings on circular hosiery machines can be fitted for pressure lubrication

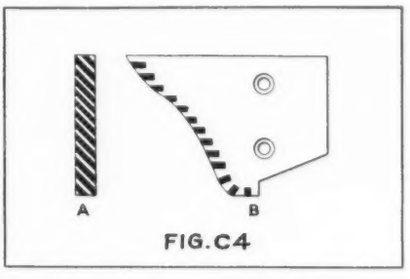


Fig. C4. Stitch cams with grooves across face for holding graphite

and allowed to work down the cylinder walls by gravity. This is possibly the quickest way, but it is wasteful and inefficient. Probably the best method of lubricating needles is by means of an atomizer or spray gun.

When needles are oiled once every shift, the tendency is to apply the oil too thickly. This leaves a surplus of oil on the cylinder to which grit adheres. This grit will find its way to the wearing surface and interfere with lubrication —sometimes enough to cause needles to heat, lose their ductility, and break prematurely. It is better, therefore, to spray the needles very lightly, even if it proves necessary to spray them twice every shift. The bulk of the lubricant should be applied near the needle butts, as this is where most of the friction occurs. The practice of oiling the latches every time the needles are oiled is not only unnecessary, but, on some makes of machines, may cause the latches to stick to the hooks, thereby causing drop stitches. A light spraying once a week sufficiently oils the latches.

Sinkers are oiled in the regular way through an oil hole on the sinker cam ring. If this hole is kept open and not allowed to become clogged with lint or grit, one drop of oil every 8 hr. is enough.

Machines with dials for knitting on the ribbed tops in one operation, have hooks and cast-off jacks working in conjunction with the needles during the knitting of the tops. Hence, best practice is to spray the cylinder of such machines while the rib tops are being knitted so as to oil the needles, hooks, and jacks with one application.

All cams should be oiled lightly once a day. To oil the cam faces heavily is only a waste, since the excess lubricant is swept off by the butts. The main driving-shaft bearings require oiling once a day, and the oiler should be careful not to overlook any of them. It is a good idea to carry a small sharp-pointed instrument — a tenpenny nail will do — while oiling these bearings to gouge out foreign matter if the oil does not sink in the hole immediately. Small shafts and studs which revolve slowly need to be oiled only twice a week, but should be given as much attention when they are oiled as are the most important bearings. The bevel and spur-gears are also oiled twice a week; although these gears are subject to great wear and require constant lubrication, owing to their construction, it is not feasible to oil them every day.

While he is oiling a machine, the fixer has a good opportunity to check up on some of the parts. For example, he may note the pattern drum to see if it is turning smoothly; he may note the raising and lowering pickers to be sure they are acting freely, and he may even be able to tell by the sound whether or not the yarn fingers are operating sluggishly.

A method for obtaining better lubrication of shaft and stud bearings on circular hosiery machines was described in an article in the January, 1938, issue of TEXTILE WORLD. This consists of fit-

ting the oil holes for these bearings with a high-pressure-lubrication device. The fitting (Fig. C3) is equipped with a spring-and-ball valve, which allows the grease to pass through, but closes immediately when the pressure of the gun is released, thus preventing grit from getting into the bearing. Again, bearings which are not easily accessible can be reached more readily with a gun.

The same article describes a method for lubricating stitch cams by impregnating them with graphite. This is accomplished by cutting a series of grooves across the face of the cams from one end to the other at a 45° angle, and imbedding graphite (hardened to a substantial degree) in these grooves. Fig. C4 shows a stitch cam for a ribber impregnated with graphite; *A* represents the face, and *B* the profile. As the graphite grooves are cut at an angle, the butts are always in contact with both the graphite and the metal; the former furnishes the lubrication, and the latter preserves the necessary strength of the cam.

FULL-FASHIONED MACHINES—Chapter II–Straightening Needles

By WALTER A. SIMOND

THE CORRECT METHOD of straightening spring-beard needles by hand was described and illustrated in a copyrighted article in the *Reading Record*, Vol. II No. 1; and some of the common faults in the needles themselves which cause needle lines in the fabric were listed in the February, 1934, issue of the same publication. As this is the most authoritative information available on these subjects and deserves careful study by fixers and knitters, it is reprinted here by courtesy of Textile Machine Works. All material in this installment inclosed in quotation marks is quoted directly or abstracted from the two issues of the *Reading Record* mentioned above.

"In starting the process of straightening a needle the first operation consists of straightening the stem with the needle flats perpendicular to the plier jaws; A, in Fig. F2, shows how hands and pliers are made to work together in order to produce a straight stem. The needle is grasped between the thumb and forefinger of the left hand with the butt toward the palm of the hand; with the needle held rigid in this position, the pliers are rubbed up and down the stem, exerting pressure wherever necessary in order to eliminate the kinks that might be present. The needle should be held in such a manner that the line of sight is along the needle stem, thus making it possible to straighten the stem quickly, accurately, and efficiently.

"After the stem of the needle has been straightened, the position of the left hand is changed so that the pliers can be made to slide along the stem of the needle with the needle flats parallel to the plier jaws. This position is shown at B. As the pliers are moved up and down the stem, pressure is exerted wherever necessary to remove all kinks from the needle. Practice alone will teach the proper amount of force to be exerted in order to straighten the needle. The third operation, shown at C, is the same as the second with the exception that the needle is reversed; that is, the beard is down—facing the operator's right hand—and the butt up.

"From the third position the pliers are brought up to the beard of the needle and just enough pressure is exerted to hold the needle in the position shown at D. The needle must be held very lightly; otherwise the pliers may close the groove slightly. With the needle in the position shown, sight along the stem to determine whether or not the butt is properly aligned with the beard. They should be exactly opposite one another; that is, 180° apart. If the butt is not absolutely in alignment with the beard, grasp the butt with the thumb and forefinger of the left hand and give it the necessary amount of twist to align the butt with the beard.

"The correct position in which to hold the needles and pliers when forming the beard is shown at F. This is a very important operation and must be done with care and precision if good fabric is expected. The beard is properly formed by placing it between the plier jaws as shown and rubbing the pliers back and forth over the beard, exerting a slight twisting force to the pliers at the point where the tip is to be curved to form the hook. Great care must be exerted to see that just exactly the right amount of hook is given to the beard. Not enough hook will prevent the loops from being pressed off properly and will very likely cause loading up of the fabric on the needles. Too much hook is likely to cause split stitches, broken needles, and beards that will be closed by the presser edge and which will not open again, thus causing drop stitches. The needles shown at E represent three common types: (1) beard without enough hook; (2) correctly shaped beard; (3) beard with too much hook. The amount of beard opening should be equal to the thickness of a needle; therefore, in order to determine whether or not the proper amount of opening is given the beard, slide the narrow part of a needle of the same gage between the tip of the beard and the needle stem. This needle should just clear the tip of the needle being tested.

"In order to put the beard in the center of the needle slot, or groove, the needle is grasped in the jaws of the pliers at the head of the needle as shown at G. By exerting a slight twist to the pliers the beard can be made to take the proper position in relation to the groove easily and quickly. Never try to place the beard in the center of the groove by using the pliers on the beard, as this will in most cases bend the beard and prevent its entering the groove properly when acted upon by the presser edge."

In placing needles in the bar, any accumulation of lint or bits of thread on the top edge of the needle plate ought to be removed before the needle plate is loosened. When waste is pushed down while putting the needles in place, it gets in the grooves to hold the needles out, or imbedded in, and damages the plate liner. A more serious fault is to get broken beards or needle butts under the bottom edge of the plate so it is twisted when the screw is tighened, thus leaving the needles loose under one end of the plate.

The worst fault is to screw the plate down on a needle which is improperly placed, and partly close the needle groove. In a location where the needles can not be seen, under the plate, drawing the forefinger across the needles will permit one to make certain that the needles are in place before tightening the clamping plate. The best method which the writer has found for cleaning out a damaged groove is to break off about an inch of the butt end of a broken needle of the same gage, grind it diagonally from front to back edge at the broken end, and smooth the sides to the thickness of the needle stem. Then holding the piece about midway with the pliers, with a finger of the other hand on the butt, scrape out the groove, being careful not to remove any metal from the bottom of the damaged slot near either end of it.

"After needles have been properly straightened by hand, it is necessary to line them up with the other needles in the bar when they are used to replace

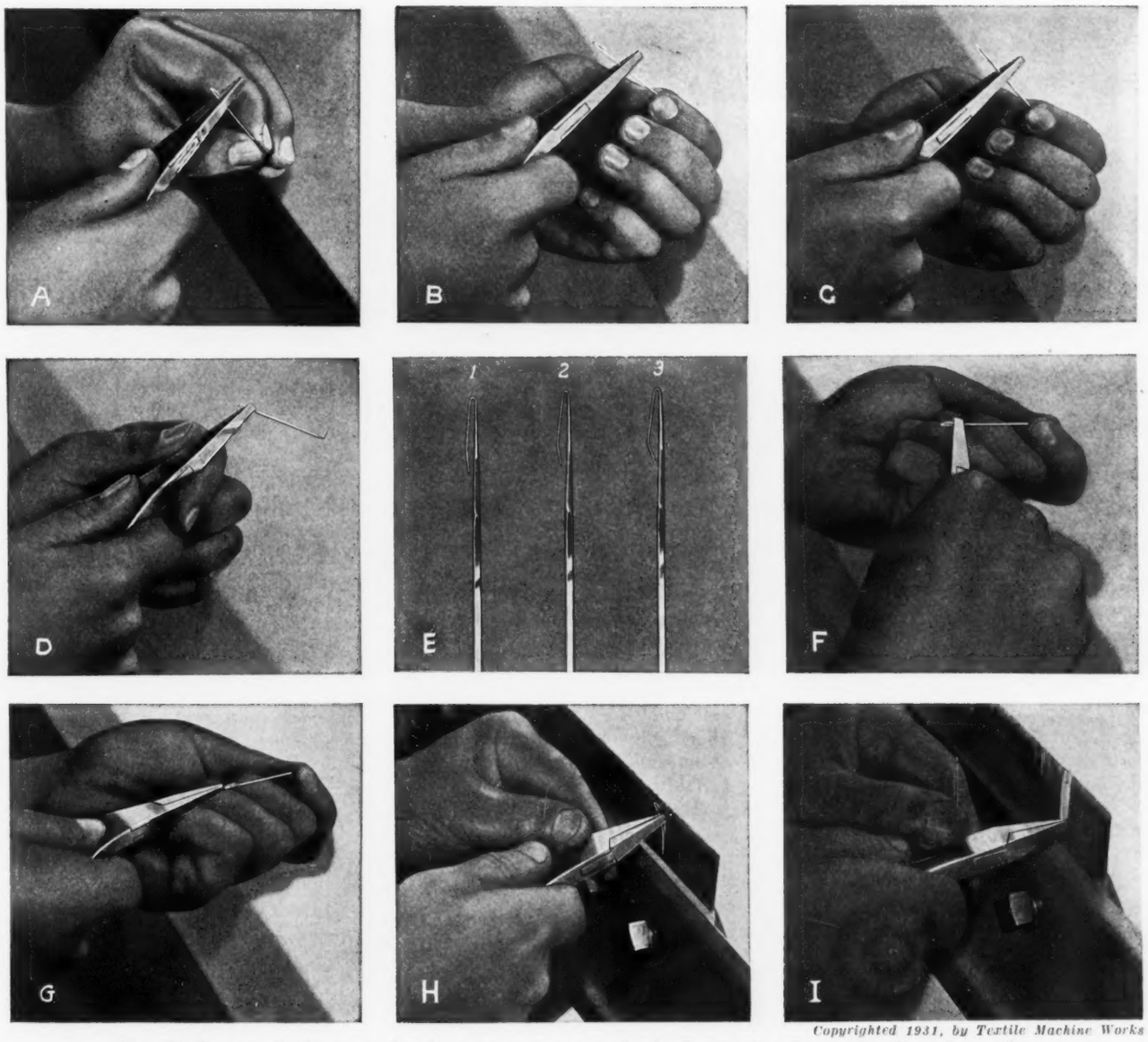


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Fig. F2 Series of photographs showing correct method of straightening spring-beard needles

worn or broken needles. The proper method of lining-up a needle with the other needles in the bar is shown at H. The pliers should be held in the right hand as shown with the pliers grasping the stem of the needle just below the groove. With the pliers in this position, the left hand is placed as shown with the thumb guiding the pliers and the forefinger resting against the needle bar as a support. The needle is then snapped back and forth until it is in accurate alignment with the adjacent needles. Constant practice will teach one the proper amount of spring to give the needle in order to bring it in line.

"After the needle has been lined up properly it is necessary to space it with the adjacent needles; that is, place it in such a position laterally that the distance will be equal between needles. To do this the needle stem is grasped with the pliers just above the needle bed as shown at I. The needle is then snapped back and forth as shown by slightly twisting the pliers until the needle is exactly square with the adjacent needles.

"Common faults of needles themselves which cause lines in the fabric include the following: (a) variation in length; (b) irregular thickness for a particular gage (usually found when using two or more makes of needles in one head); (c) roughness of needle surface, especially at the groove; (d) rust spots which have a tendency to catch and hold the yarn, either breaking it or causing the formation of a larger loop; (e) bent stems that throw the beard out of line with adjacent needles. When replacing needles in the bar, after tightening the needle clamp, slide the fingers over the needles on the inside and outside to make sure there are no humps in the stems; [pressure of the straight edge of the knitter's white card against the needles will also cause the tops of such needles to move out of alignment].

"Some other common faults are: (f) sticky needles resulting from an accumulation of silk gum and oil; these cause loading-up of fabric on the needles, as well as lines; needles should be cleaned with a soft brush and kerosene oil at least once a month; (g) misalignment with relation to sinkers and dividers; (h) not held solid in grooves of the needle bar [the joint between needle plates must be central between two needles, or the needle at the end of one of the plates will be loose; a needle plate should never be moved laterally without having a new liner]; and (i) improper beard shape.

"Where the needle is to be used for making net or lace work, the beard opening should be increased by 0.002 in. and great care taken to shape the beard as shown at 2 in Section E of Fig. F2, above.

Facts About Fulling

Three functions served by soap; liquid soap system has numerous advantages

Factors which control the fulling process, effect of soap and alkali on the finished fabric, breaking down of soap or soap emulsions in the fulling mill, the scouring value of the fulling operation, and other points of interest to finishers of wool fabrics are discussed in a bulletin "Fulling Facts," issued recently by the Textile Research Department of Procter & Gamble Co., Cincinnati, Ohio. The following abstract of two sections of the bulletin—one on the functions of soap in fulling, and one on a liquid soap system for fulling departments—is presented through the courtesy of that company.

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SOAP SERVES THREE FUNCTIONS in fulling. It lubricates the fabric, reducing friction and preventing bare finishes or lack of the desired felt. It assists in softening the fiber, increases its curl and makes it more susceptible to the fulling operations. It loosens the dirt and oil in the cloth and holds it in suspension and emulsion, actually starting the scouring process.

Selection of the type soap to use has been governed to a great extent by the type of fabric to be fulled. In general, the high-titer soaps were used for the fulling of heavy woolens; the medium-titer soaps were more popular for worsteds and lighter-weight woolens. In recent years, some finishers have gone a step further and used the low-titer soaps. Use of low-titer soap originally started with the fulling of some of the finer specialty fabrics. Today, however, this type is being used for practically all classes of fabrics.

A low-titer soap dissolves more rapidly than a high-titer soap. It saves time, steam, and labor. It gives more even distribution and quick penetration of the soap on the cloth, which results in a faster start of actual fulling and less danger of uneven felting or shrinkage. It rinses more rapidly and economically, with a greater protection against odor development. It is extremely resistant to rancidity and minimizes possibility of trouble from odor development. On the other hand, it does not provide the same heavy body that high-titered soaps have, and which some finishers prefer under some conditions.

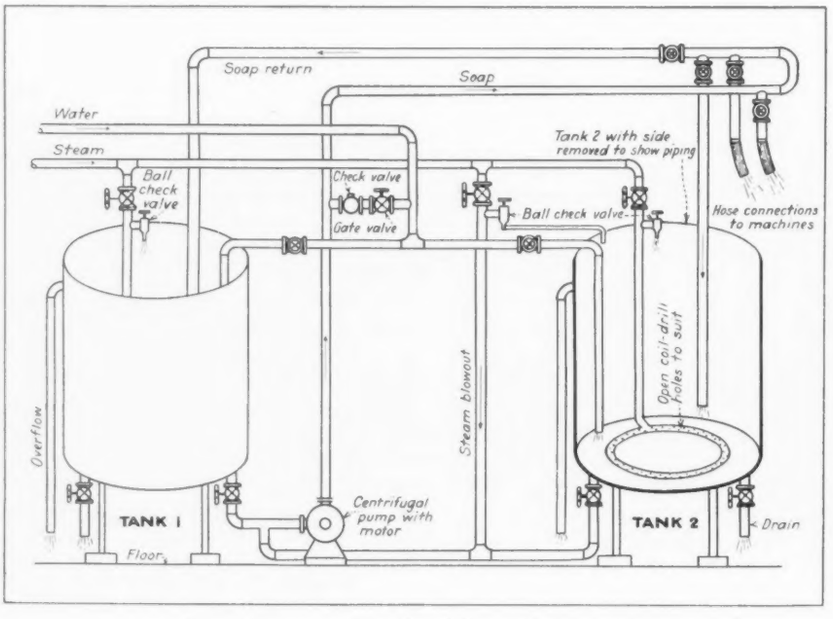
A great deal of misinformation exists on the subject of soaps breaking down in the fulling mill. Unless the cloth is on the acid side, neither high-titer nor low-titer soaps break down due to the fulling process itself. Actually what happens is that frequently too little soap-alkali solution is used to emulsify all the dirt, oil, loose dyes, etc., on the cloth. Consequently, the emulsion breaks, and the dirt, oil, etc., are redeposited on the fabric. This condition takes place regardless of the body of the fulling solution, provided the real soap content and the strength of alkali used are the same.

The fulling solution should be of sufficient strength to do a good fulling job and build a good first suds for the scouring operation. Therefore, the actual amount of soap required for fulling should be determined, not by the small amount required for lubricating purposes, but rather by the quantity and type of oils and dirt which it has to emulsify and get ready for the scouring process. For this reason, it is advantageous to put a generous amount of soap on the cloth in the mill. Care must be taken, however, not to have so much soap that the cloth slips, which may result in damage.

LIQUID SOAP SYSTEM. Since the introduction of the low-titer type of soap, the physical aspect of the modern fulling and scouring department has changed radically. Instead of barrels placed against fulling machines and washers, trucks being pushed from one mill to the next, or soaps "slopped" from a bucket as the workmen take the soap from the stock fulling solution, today's plant has one or two large tanks of soap solution placed in a convenient space. The soap solution is pumped from the tank to the fulling mills and the washers. The more modern plants have even installed systems whereby it is possible for them to open a valve, and a predetermined amount of soap is fed automatically on the fabric.

The accompanying diagram shows a liquid soap system with tank sizes and pump to suit one-day mill requirements. Specifications: (1) Tanks to be off floor to permit piping underneath. (2) Run all lines to near bottom of tanks to prevent sudsing. (3) Use globe valves for steam; gate valves, for water and soap. (4) Open coil is used to mix soap solution. (5) 3½-in. ball check valves are required as vacuum breakers to prevent soap solution backing up into pipelines and boilers. (6) Each tank can be used separately while solution is being prepared in other tank. (7) If steam pressures above 50 lb. are used, put a safety valve on the soap line.

To operate system start pump, open valve under tank, open return valve to tank, use valves to fullers and other machines as required. To shut down system close valve under tank, stop pump, open steam blowout valve into pump suction, and blow out soap and return lines into tank.



Liquid soap system for fulling department

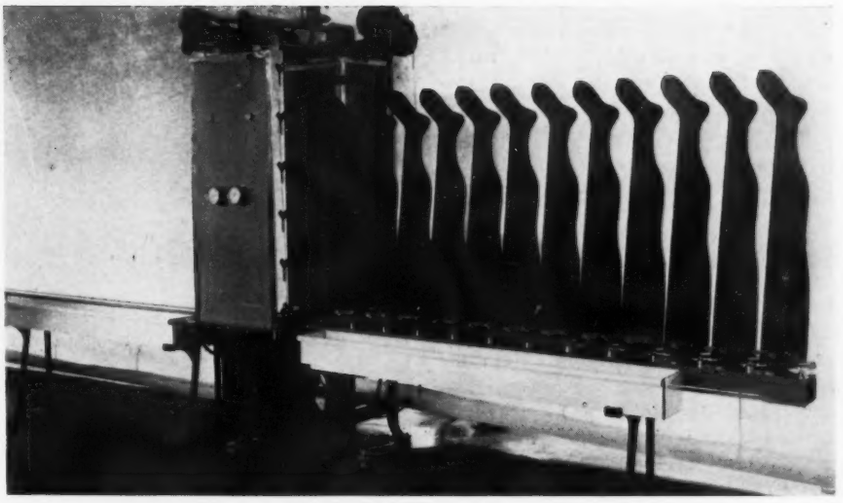
TEXTILE EQUIPMENT NEWS

Nylon Preboarding Machine

Designed to give increased production at lower cost, the new Nylon pre-boarding machine developed by Dexdale Hosiery Mills, Lansdale, Pa., for its own use is now being offered to the trade. The machine is fully automatic in its cycle of operations and, it is maintained, the only work required of the operator, beside boarding and stripping, is pressing a button to start the cycle. Average length of cycle is 3 min. but this can be changed at any time by setting the timing device.

The machine accommodates 24 boards with the operator boarding twelve while the other twelve are in the steam chamber. The machine is actuated by two ⅓ hp. motors, one operating the doors and the other moving the forms. The steam chamber has a capacity of 8½ cu. ft., and operates at steam pressure of 14 to 15 lb. at temperatures to 244° F. The solid forms are said to prevent pulled strands and other damage and to be as easy to interchange as toe tips.

The machine, which it is stated can also be used for drying of regular hosiery, has the following dimensions: height, 8 ft.; width, 5 ft. 6 in.; length 17 ft. 10 in.



Nylon preboarding machine (Dexdale)

Metal For Castings

A new metal developed by Draper Corp., Hopedale, Mass., for loom parts such as pick-cam hubs, pick shafts, and other castings subject to shock, is said to be 23% stronger than, and 32% more resilient than, their gray iron and to provide greater strength without an increase in weight.

Eight-Color Printing Machine

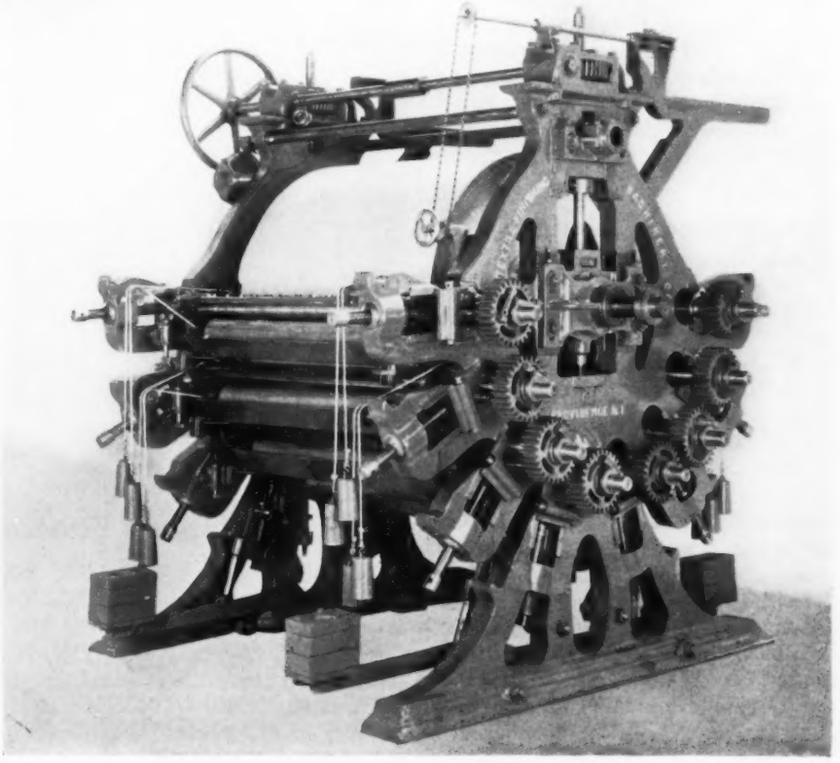
For use in connection with the Bulford patents, an eight-color printing machine has been built by Textile-Finishing Machinery Co., Providence, R.I. By a new method, printing speeds approximately double those obtainable with conventional equipment are made possible, it is said. Combined with the new machine is a tenter frame automatically controlled by photo-electric beams.

The rubber-covered main cylinder is roller-bearing mounted, and jacketed for water cooling. The oscillating motion of the doctors is driven by a separate motor, in no way connected with the cylinder or print-roller drive.

Top Roller Feed Machine

For use on sleeve placket and button-stay operations on shirts and knit undergarments a new top-roller feed machine has recently been announced by Union Special Machine Co., 400 N. Franklin St., Chicago. The machine is designated Style 51200 JZ. The top-roll feed is said to enable shirt manufacturers to attach sleeve plackets and button stays absolutely straight.

For attaching woven button stays to



Eight-color printing machine (Textile Finishing)

knit undergarments, the machine is equipped with a differential feed in addition to the top-roller feed. The purpose of this combination is to eliminate any tendency of the button stay to curl and enable operators to put stays on absolutely smooth and flat.

This company has also announced a new, low cost 2,000 to 8,000 r.p.m. tachometer for checking sewing machine speeds. It is said that a large, simply graduated dial makes possible accurate readings at a glance, and that the device requires no adjustment.

Reel Construction

Rodney Hunt Machine Co., Orange, Mass., has announced a "pipe body" construction on its line of stainless-steel reels for dyeing machines. The new feature is said to provide greatly increased strength where most needed and to allow the elimination of middle bearings on reels up to 20 ft. in length. It is maintained that reels of this construction are fortified against bending under heavy load pressure and against twisting as machines stop and start.

Doff Truck

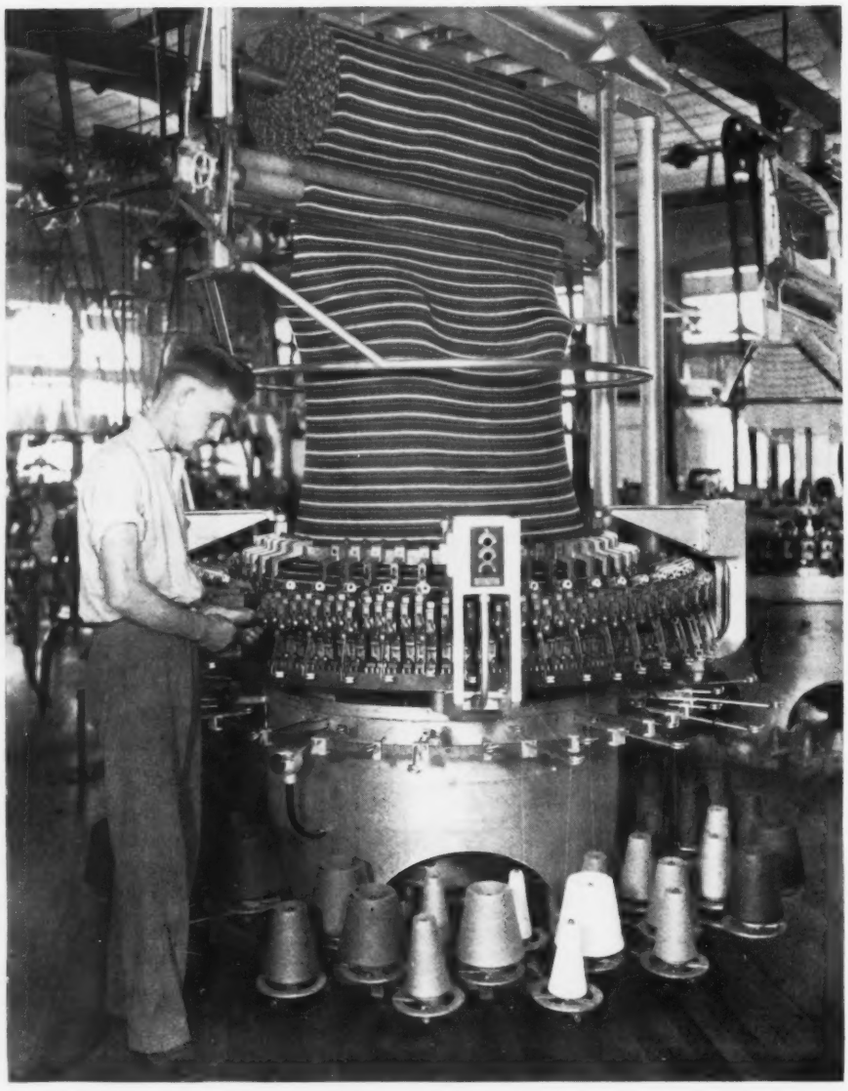
W. T. Lane & Bros. Inc., Poughkeepsie, N. Y., are announcing a doff truck, designated style 508. Built integral with the dolly is a sheet steel box to hold empty bobbins. The loose, or yarn, box of steel-frame-and-canvas construction is said to be rugged and long-wearing as well as light and easily handled. It is maintained that the canvas construction reduces hazard to hands and clothing by complete elimination of splinters and sharp edges during the entire life of the container.

Spring-Needle Knitting Machine

The Carhart spring-needle knitting machine, announced a few months ago by W. C. Lipe, Inc., Syracuse, N. Y., is said to embrace many new developments which make possible increased production of finer quality cloth. It is stated that the machine knits silk, wool, rayon, and cotton into all types of fabrics from overcoatings to sheer silks, and in all gages from 6 to 50.

Motor drive is controlled from four conveniently located stations. The cylinder, obtainable in diameters 30 to 50 in., runs on ball bearings. Compact design of bur stands and very small cloth wheels permit approximately one yarn feed per inch; a 48-in. cylinder can carry 52 feeds. Electric safety stops, up to the total number of feeds, stop the motor and apply an electric brake which halts the cylinder within one-tenth revolution. Wide stripes, made without striping attachments, and cut-pressure patterns in infinite variety, are said to be possible.

Automatic take-up utilizes a 62-in. cloth roll of mottle-surfaced stainless steel. The method of handling cloth at the needles is said to relieve yarn of all undue strain, resulting in uniform and relaxed stitches.



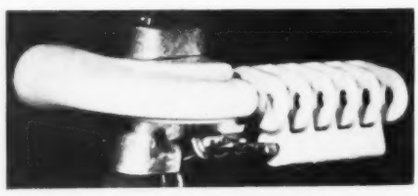
Spring-needle knitting machine (Lipe)

Finish For Harness Frames

Gold Seal waterproof finish for wooden rails on harness frames has been announced by Steel Heddle Mfg. Co., 2100 W. Allegheny Ave., Philadelphia. This treatment, it is stated, grants an absolutely smooth wax-like surface to the lumber and prevents lint or other adhesive substances from clinging to the harness shafts. The waterproof characteristic of the finish is said to make wooden parts immune to the detrimental effects of weave-room moisture, water, or climatic changes.

Tension Device

Robert Reiner, Inc., Weehawken, N. J., has introduced a counterbalanced grate-type tension device, Model No. 990, that is said to be applicable to almost any standard creel. Tension is controlled by weights hung on a hook



Counterbalanced tension (Reiner)

below the air-piston; for yarns requiring tensions lighter than that given by the fingers alone, weights can be hung on the hook on the opposite end.

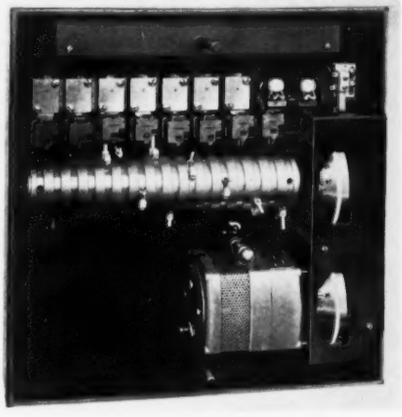
It is said that this device is suitable for running all yarns from finest rayon to coarsest cotton.

Automatic Timer

Adaptable for all-electric, all-pneumatic operations, or combinations of both, the Flex-O-Timer, recently introduced by Taylor Instrument Companies, Rochester, N. Y., is designed to permit maximum precision of timing with minimum labor and expense. It is expected to be particularly applicable to package-dyeing and other textile machines in automatically maintaining proper sequence and duration in the operating cycle.

It is stated that use of adjustable pins on the revolving drum provides extreme flexibility, and that the pins are easily and precisely adjusted in circumferential undercut grooves, making it possible to turn on or off an air valve or switch in ½ to 1% of the total cycle time.

The design embodies variable drum

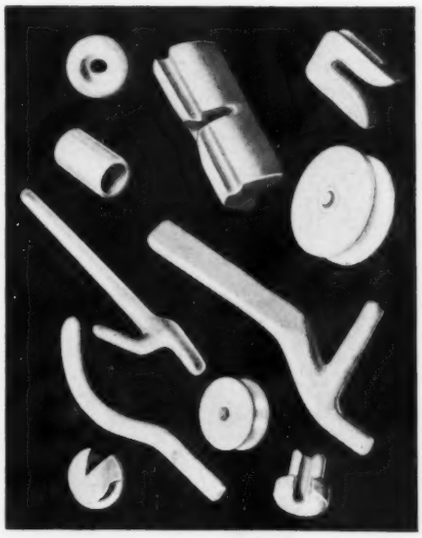


Flex-O-Timer (Taylor)

speed, and a new type air valve said to utilize 99½% of the air passed through it.

Thread Guides

American Lava Corp., Chattanooga, Tenn., is introducing thread guides made from AlSiMag 192, a material which has seen major service in the electrical and chemical fields for many years. Though higher in cost, it is maintained that AlSiMag guides outwear many others because the material is homogeneous, has no outer coating to crack or wear through, and thread friction serves to maintain the original polish rather than destroy it. The material is said to be resistant to all alkalies and to all acids except hydrofluoric, to have a water absorption of zero, to be completely rust or corrosion proof, and to withstand temperatures up to 2,642° F.



Thread guides (American Lava Corp.)

Thread guides from AlSiMag 192 are not obtainable in stock designs or patterns but are custom built to specification or sample.

Useful Accessories for Textile Mills

Variable Speed Drive. Mechanical Handling Systems, Inc., Detroit, Mich., recently announced a high capacity, infinitely-variable, drive unit expected to eliminate special engineering previously necessary. It is available in capacities up to 80,000 lb. torque with speed ranges from 310 r.p.m. forward to −9 r.p.m. reverse.

Odor Absorber. Dorex Division of W. B. Connor Engineering Corp., 114 East 32nd St., New York, has announced an odor absorber designed on the gas mask principle which, by drawing odor-laden air through highly activated charcoal, is said effectively to remove all odorous and gaseous impurities and return purified air to the room.

Centrifugal Pump. Worthington Pump and Machinery Corp., Harrison, N. J., recently announced a centrifugal pump with motor and pump engineered as a balanced integral unit. The unit is offered in sizes from 1 to 4 in. with capacities to 1,000 g.p.m. against heads up to 280 ft. and is available in bronze-fitted, all-iron, and all-bronze constructions, horizontal or vertical mountings.

Solderless Connector. Square D Co., Detroit, Mich., has developed a new solderless connector said to accommodate all wire sizes from No. 14 to No. 4 and to save much time in wiring installations.

Switches. General Electric Co., Schenectady, N. Y., recently introduced a new line of one- and two-button standard-duty push-button stations designed for improved operation, appearance, and ease of installation.

A new plugging switch recently announced is designed for compactness, low operating torque and immunity to heat. The use of an Alnico Magnet as the fundamental part is said to eliminate frictional parts and contribute to long operating life.

Another announcement by G. E. is an improvement in design of MI-9 metal-clad switchgear. All buses and connections are now completely covered with molded insulation.

Tablet Dispenser. Milburn Co., Detroit, Mich., has introduced a new moisture proof salt tablet dispenser with a capacity of 1,000 ten or fifteen grain tablets, and made of plated aluminum said to be impervious to corrosion.

Iron Removal Filters. Wm. B. Scaife & Sons, Co., Pittsburgh, Pa., recently announced a filter designed to remove iron from water by a process known as catalytic filtration. It is said that soluble and insoluble iron, regardless of form, are removed, and that no regenerating chemicals are required.

Floodlight. Benjamin Electric Mfg. Co., Des Plaines, Ill., have introduced a new aluminum floodlight with a 90 degree beam spread, said to give exceptional lighting efficiency. A hinged cover is designed for absolute protection to lamp and reflectors against moisture, dust, dirt and fumes or smoke.

Fluorescent Lamps and Floodlight. Westinghouse Lamp Division, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., recently announced a new 85-watt 58 in. type RF fluorescent lamp designed for industrial service. It is operated on 105-125 volt or 210-225 volt 60 cycle a-c circuits which are converted to d-c through a rectifier. White and blue-white lamps are interchangeable in single and twin fixture units.

A new 48 in., 2-lamp, 40-watt fluorescent luminaire with spread distribution, designed for general or supplementary lighting is furnished complete, and can be operated on 110-125, 199-216, or 220-250 volt circuits. The lamp is said to have an over-all efficiency of 78%.

Two new lightweight weatherproof

floodlights of rigid construction, employing one piece reflectors and aluminum socket housings, and mounted on brackets allowing 360 degree horizontal and 135 degree vertical adjustment, are in sizes utilizing 100 watt and 200 watt lamps. They are available with plain or spread beam distribution and with white or colored lenses.

New Dyes and Chemicals

General Dyes

General Dyestuff Corp. announces the following new products: Direct Deep Black GR Conc., a double-strength direct black which produces a duller and somewhat redder shade than the average green shade of direct Deep Black; dischargeability is good, fastness to alkali very good; other fastness properties are moderate; dyeings can be aftertreated with formaldehyde with a resultant appreciable improvement in fastness to washing and water.

Cellitazol BNF Extra Soluble and Cellitazol 3 GNF Extra Soluble, two new soluble acetate developed blacks; both products yield pleasing bluish or greenish shades of black which possess very good fastness to sublimation, rubbing, washing, and light.

Calco Colors

Calco Chemical Division, American Cyanamid Co., announces the following new products: Calcocid Alizarine Blue SAPG, an acid dye of the sulphuric acid dyeing type producing brilliant shades of excellent fastness to light even in weak shades.

Calcomine Rayon Black Ex. Conc., a direct dye recommended particularly for dyeing viscose rayon and in combination with Calconese Diazo Blacks for dyeing viscose-acetate fabrics.

Phoenix Products

Phoenix Color & Chemical Co., Inc., announces the following new products: Benzaphen Violet BCW, a direct color which leaves acetate rayon pure white, making it suitable for dyeing viscose-acetate fabrics; dyeings have good dischargeability, and good fastness to washing, light, acids, and alkalis.

Benzaphen Bordeaux BCW, a direct color which leaves acetate rayon white; dyeings have very good fastness acid, alkali, light, and washing, and discharge to a pure white; wash fastness is further improved by aftertreatment with formaldehyde.

Phenaldhyde Blue Green B, a direct, bright blue green which is rendered fast to washing by formaldehyde aftertreatment; dyeings have good fastness to light, acid, alkali, and ironing, and discharge to a pure white.

Permanent Resin Finish

Development of a new peranent synthetic resin finish has been announced recently by Arnold, Hoffman & Co., Providence, R. I. This compound, known as Resynon SL, is said to combine softening properties with bodying effect and to give a flexible, full-bodied hand, without harshness or stiffness, on rayon, Nylon, cotton, wool, and linen. It is stated also that it brightens colors without affecting their fastness to light, and does not discolor or develop odors upon exposure to light or heat or upon prolonged storage. The finish requires no curing operation, and is resistant to repeated washing and dry-cleaning. Resynon SL can be used in formulas containing starch, gums, and many types of resins; but should not be mixed with alkalis, soap, sulphonated oils, or similar products. It is available in the form of a paste and is dissolved by mixing with water previously heated to 160 to 180° F. Usual method of application is by immersion or padding on a quetsch or mangle followed by any of the common methods of drying.

Yarn Lubricant

For treatment of cuprammonium and other synthetic yarns for full-fashioned knitting, a new neutral oil of low viscosity, has been announced by National Oil Products Co., Harrison, N. J. This product, known as NOPCO 1555-X, is said to impart added softness and lubrication to these yarns, assuring evenness of stitch formation in full-fashioned knitting. It is stated that the new oil is highly resistant to oxidation and rancidity and that it may be applied without any additional preparation.

Fugitive Tints for Staple Fibers

A line of oil-soluble fugitive tints for identifying cotton and viscose and acetate staple fibers has been developed by United States Testing Co., Hoboken, N. J. Known as Cumol Tints, these products are oil-soluble dye concentrates to be added to the oil used in conditioning cut staple fibers. Cumol Tints are applied directly to the stock without the use of any water, eliminating delays now encountered in drying out the stock. The following eight colors are available: red, blue, yellow, green, purple, orange, grass green, and brown. Cumol Tints are available in 5-gal. cans and 50-gal. drums.

New Publications

Knit Goods Information For Stores and Schools

KNIT FABRICS, by Jessie Caplin; Riverside Press, Inc., St. Paul, Minn.; 25 pages; $1.00.

This booklet approaches knit fabrics from an educational point of view. It considers constructions and yarns commonly found in knit underwear and outerwear, and includes sketches and actual samples illustrating the fabrics discussed. Emphasis is placed upon terms found in retail advertising, in mail order catalogs, and on garment labels. One section is devoted to tests for identifying fibers most generally employed in knit fabrics.

For Wool Manufacturers

BULLETIN OF NAWM: National Association of Wool Manufacturers, New York and Boston; $2.00.

Volume LXIX of this series covers activities of NAWM for 1939 and gives a compendium of statistics and other matters relating to the wool textile industry. Reports on trade agreements, labeling regulations, wage-hour, and standards for the industry should be of interest.

Industrial Health

INDUSTRIAL HEALTH—ASSET OR LIABILITY, by C. O. Sappington; Industrial Commentaries, Chicago; $3.75.

Better business through group health programs for employees will probably be a general industrial practice some 10 years from now. A good start in that direction is this book which certainly encourages the installation of such programs.

Dr. Sappington, who is renowned in the field of industrial medicine, presents his theories as practical business pointers, not just as humanitarian angles. He

points out that lack of health, even in minor phases, creates loss of time and loss of dollars for the company whose employees are in any way physically sub-standard. He believes in that ounce of prevention instead of that pound of cure, and gives in detail some methods of approach in arriving at health in industry. He cites long-term health planning for employees by business corporations as the most progressive step progressive companies can take. To back up his theory he gives excellent examples of results obtained from health programs. And then he makes the way easier for interested readers by including in the volume a complete set of model blanks to be used for health records, medical examinations, etc.

Really this is an interesting book and one which may mean dollars and cents saved for industrialists who read it and heed it.

A Mine of Cotton Information

COTTON FROM RAW MATERIAL TO FINISHED PRODUCT: The Cotton-Textile Institute, Inc., New York; 75c.

The second edition of this book has just been published and represents a revision of the first edition, and in addition to being carefully revised, it contains more swatches than its predecessor. It is a veritable mine of information concerning the characteristics and qualities of cotton, its uses, cotton mills and their products, spinning and weaving of cotton, finishing of cotton fabrics, and description and use of staple cotton fabrics.

In Defense of Free Enterprise

MAGNIFICENT DELUSION, by Fred G. Clark; Whittlesey House, New York; $1.00.

Early in his book Mr. Clark reminds us that the American heritage is based upon the privilege to rise in the world as a result of effort, and that as American citizens we are still directly involved in the maintenance of that birthright.

The Magnificent Delusion under which we now seem to be laboring is that it is possible for us to maintain our economic system of individual enterprise and at the same time live up to our newly-developed national social conscience. Most Americans feel that the Government should take care of the underprivileged but just how this "humanitarianism" is to be paid for is a problem which has not yet been attacked on a workable economic basis.

In order that we do not destroy our heritage, Mr. Clark suggests: (a) that we improve the efficiency of local governments, (b) that we fight, if necessary, for freedom of speech and promote open discussions on all social and economic problems, (c) that the church cling to its task of preparing people to meet their many problems rather than set itself up as an active economic authority, (d) that we prepare our rising generation to cope with the responsibilities of American citizenship and (e) that we return to paying "as we go" for our Government so that our national credit will not be jeopardized.

Even though he exposes himself to criticism for his bias and despite the fact that one may not agree with some of his conclusions, the author presents his thought-provoking thesis in a clear and unmistakable manner.

A Delightful Novel

SPRING WILL COME AGAIN, by Florence Glass Palmer; Bobbs-Merrill Co., Indianapolis; $2.50.

This is one of the most delightful novels of Deep South and cotton growing that has come from that section. Laid in the Black Belt of Alabama, the story covers many cotton seasons, telling in simple form the hopes, the plans, the disappointments, the everyday living of a perfectly charming family who own none of the rich cotton land, but who make an annual profit from planting cotton on rented land.

The story rings true throughout and fills the reader with the conviction of the hero, William Day, who believed that able cotton plantation management and cash wages to the negro laborers was not only good business but a needed socializing influence in Alabama.

Incidentally, the book touches upon the establishment of cotton industry in the cotton-growing regions, but sticks to cotton economics as its main theme.

It is good reading, and should be of particular interest to cotton manufacturers. It handles in so able and so sympathetic a manner the timeless problems of southern living and cotton planting.

Clean Wool For Processing

THE SCOURING OF RAW WOOL by T. E. Thompson; Emmott & Co. Ltd., Manchester, England; 23 pages; one shilling.

Briefly, but fairly completely this booklet covers the chemical factors and problems involved in scouring raw wool. It attempts to show how the general level of scouring efficiency can be improved and a more satisfactory and uniform raw material produced as a starting point for subsequent operations.

A.C.M.A. Proceedings

PROCEEDINGS OF 44TH ANNUAL CONVENTION; American Cotton Manufacturers Association, Charlotte, N. C.

This annual volume contains complete proceedings of the White Sulphur Springs convention and also names of active and associate members of the association.

News of Suppliers

Textile Finishing Machinery Co., Providence, R. I., has appointed Thomas Harris, formerly president of Harris Textile Machinery Co., Providence, to the office of general manager. Mr. Harris was for a long period general superintendent of the Woonsocket plants of Manville Jenckes Corp., and is an originator of new textile equipment, with numerous patents to his credit. R. D. Rusden has been made chief engineer, replacing R. E. Rusden, retired.

American Textile Engineering, Inc., Kearny, N. J., and its affiliated corporations have been merged into one new corporation known as Kearny Mfg. Co., with offices and shops at Kearny, N. J., and Greenville, S. C. John Klinck, of Augusta, Ga., the firm's representative for many years, will be manager at Greenville, assisted by Walter P. Rutley and Harold J. Hodge of the technical staff. The company will maintain the Textile Engineering Division, featuring conditioning and other auxiliary machinery, and the Textile Chemical Division, featuring conditioning liquids and other textile chemicals.

Woonsocket (R. I.) Napping Machine Co. announces that Russell Nash, formerly with Nashua Mfg. Co., has joined the sales and engineering department.

Electrical Testing Laboratories, East End Ave., at 79th St., New York, has issued a pamphlet titled "Independent Laboratory Services to Government." It points out that independent laboratories can render valuable service in connection with the national defense program, and suggests that obstacles currently hindering use of such services be removed.

Sonoco Products Co., Hartsville, S. C., has elected Charles H. Campbell, formerly general sales manager, to be a director and vice-president in charge of sales. He has been actively engaged in the sales department of Sonoco for more than 20 years. He is widely known throughout the textile and paper

CHARLES H. CAMPBELL, lately elected director and vice-president in charge of sales of Sonoco Products Co.

industries, and has served two terms as Mayor of Hartsville.

Emmons Loom Harness Co., through Clifton E. Watson, manager of southern sales, located at Charlotte, announces the following list of Emmons' representatives in the South: Henry E. Littlejohn, president of Piedmont Reed & Sales Co., Greenville, S. C., will act as South Carolina agent for Emmons on all products except reeds; Arthur W. Harris of Harris Mfg. Co., Atlanta, Ga., will serve as Emmons agent in Alabama, Georgia, Louisiana and Mississippi for all products except reeds; Clifton Watson, manager of southern sales, Charlotte, represents Emmons in North Carolina, Virginia, West Virginia and Tennessee; William L. Braley, of Southwest Supply Co., Itasca, Texas, represents Emmons in Texas and Oklahoma. Emmons products will be stocked in Greenville, Charlotte and Atlanta.

Textile Hall Corp., Greenville, S. C., reelected its officers at the annual meeting held recently in Greenville. W. G. Sirrine is president; J. A. McPherson, vice-president; Miss Bertha M. Green, secretary. The biennial Southern Textile Exposition is scheduled from March 31 to April 5, 1941.

National Association of Knitting Machine Manufacturers met in Laconia, N. H., June 21 and discussed problems facing the industry, and enjoyed dinner and speedboat rides on Lake Winnepesaukee. The group held discussion at the Laconia Tavern, inspected the plants of Scott & Williams, and dined in Meredith.

A. M. Tenney Associates, Inc., New York, have appointed Alan A. Clow to represent them in Georgia, Alabama, Mississippi and Tennessee in the distribution of Eastman acetate yarn and the staple fiber "Teca." Mr. Clow will make his headquarters at 1521 Candler Bldg., Atlanta. He was previously associated with Wilson & Bradbury and with Marshall Field & Co.

Sonoco Products Co., Rockingham, N. C., which recently purchased the Southern Tissue Mill at Midway, suburb of Rockingham, will transfer the cork cot and roving can departments from its main unit at Hartsville, S. C., to the new unit. The Rockingham unit will also be moved to Midway.

Illinois Development Council has started a program of industrial and agricultural promotion, with the initial advertisement scheduled for appearance in business publications. The campaign is being conducted in the same fashion as the advertising campaign of a manufacturer who directs his message to industrial users—that is, by devoting the advertisements to the requirements of particular industries reached through the business publications on the schedule. The W. H. Brown Advertising Agency, Chicago, is handling the campaign.

Keever Starch Co., Columbus, Ohio, has appointed Claude B. Iler as southern agent with headquarters at Greenville, S. C., succeeding Daniel H. Wallace, who has resigned after many years service with the company. Mr. Iler was promoted to his new office and his post in the Greenville territory has been taken by J. C. Attaway.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has appointed James H. Jewell as manager of agency sales.

United States Testing Co., Hoboken, N. J., has completed installation of a new standard temperature- and humidity-controlled conditioning-room at its Southern Testing House in Greensboro, N. C. The new conditioning room is insulated with Vapor-Sealed Celotex and lighted by fluorescent lamps. Parks Cramer Co. installed air conditioning and dehumidifying equipment. The room will be controlled in accordance with A.S.T.M. requirements for standard atmosphere. The company has designated S. C. Mayne, Jr. as assistant manager of its South Testing House at Greensboro, N. C., working under S. J. Gillis, manager of the Greensboro branch. The testing company has installed at its main Hoboken, N. J., laboratories a new Weather-Ometer to permit complete weathering and aging tests on paints, lacquers,

ELMER F. SMITH (at left), manager of the Chicago office of American Aniline Products, Inc., won the Atlas Ometer Golf Trophy with a low gross score of 78 in a field of 91 players at the annual outing of the Mid-West Section of the A.A.T.C.C., Lake Lawn, Delavan, Wis., June 22. V. S. Weiler (right) sales manager of the Atlas Electric Devices Co., Chicago, is shown presenting the trophy which will remain in Mr. Smith's possession until next year. It will become the permanent property of the member who wins it three times. A new cup will be presented by Atlas when that occurs.

ALBERT PALMER (third from left) was guest of honor at a dinner tendered him by fellow executives of Crompton & Knowles Loom Works, Worcester, Mass., recently. The event was in recognition of Mr. Palmer's election to the board of directors and his appointment as Director of Engineering. At the head table shown above are (left to right): N. F. Ward, superintendent of C. & K. plant; J. F. Tinsley, president of the company; Mr. Palmer; J. H. Doyle, Mr. Palmer's assistant; Irving H. Verry, vice-president, and R. S. Frost, vice-president.

RETAILERS SAY *"MADE WITH DIXIE Durene"*

MEANS *"MORE CONSUMER SATISFACTION"*

You might think that the manufacturer of a product like yarn would not worry himself very much about the ultimate consumer of the merchandise into which his yarn is knit.

"After all," says the skeptic, "the yarn loses its identity once it is made up."

Sorry, but we don't agree. We know that the many checks and laboratory tests we make on *Dixie durene* to assure longer wear, greater lustre, smoother finish, are appreciated by the ultimate consumer as he receives these benefits in *Dixie durene*-knit garments. He may not know the name of the yarn, but he does know the extra satisfaction he gets from the benefits imparted to the garment by *Dixie durene.*

We shall continue our research and testing on "consumer satisfaction." When you order mercerized numbers, we suggest that you gain Dixie's "built-in" advantages at no extra cost by always specifying *DIXIE . . . DURENE AT ITS BEST.*

Dixie MERCERIZING COMPANY, Chattanooga, Tenn.

DIXIE DURENE . . . A PRODUCT OF CONTROLLED MANUFACTURE

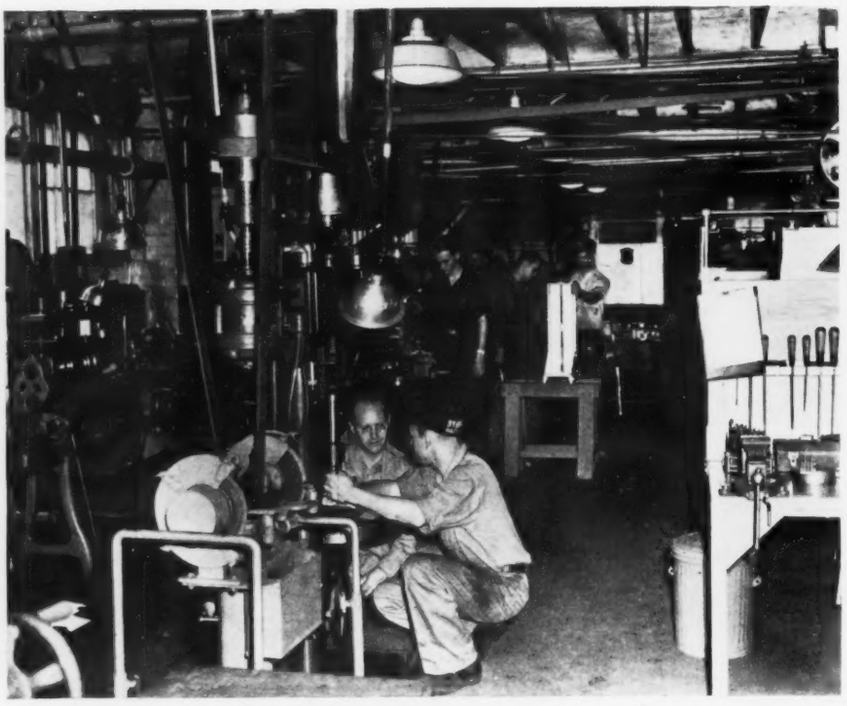
leathers, and coated fabrics. Frank G. Boyé, general manager of the Yarn Division, has been designated, in addition, as manager of the Storage Department at Hoboken. He has been a member of the company's executive staff over 20 years.

Joseph Amon, Rahway, N. J., has incorporated his business as "Joseph Amon Incorporated" which will continue the firm's activities as heretofore. Officers of the corporation, who have been affiliated with Joseph Amon in executive capacities for many years, are: president, Joseph Amon; vice-president, Alexander Amon; treasurer, Anton Amon; secretary, Stephen A. Gassler.

American Bemberg Corp., New York, has prepared a new illustrated chart entitled "The Story of Bemberg Rayon" available at a nominal charge to home economics teachers and to training departments of retail stores and buying offices. The process of manufacture, the qualities and characteristics of fabrics made with Bemberg rayon, and the significance to the consumer of the U. S. Testing Co. Service to insure serviceability of fabrics or garments identified by "Certified" Bemberg tags, are explained. Twenty swatches are presented in the chart.

Impregnole Corp., New York, has added Miss Nannene Gowdy and Edward Starks to its staff. Miss Gowdy will be technical adviser to the cut-

CELEBRATING TOLEDO'S 1940 Community Chest victory: (left to right) William E. Levis, president of Owens-Illinois Glass Co. and John D. Biggers, president of Libbey-Owens-Ford Glass Co. A case study of Toledo has been made in the current issue of *Factory Management and Maintenance*, as typical of what industry can do for America. Toledo was selected as a sample of how enlightened and vigorous local leadership, on the part of industry and business management, can make over the spirit of a community. Progress in the glass industry, for example is a source of civic pride in Toledo, and enhanced reputation in the eyes of outsiders.



TERRELL MACHINE CO., INC., Charlotte, N. C., three months ago began the systematic training of apprentice machinists, and a well-equipped shop was set apart for this purpose. Photograph shows the supervisor instructing an apprentice in use of a drill press. In addition to shop work, the course includes classes in sketching, blue-print reading, shop mathematics, English, etc. The shop is being operated 42 hours a week, three hours being devoted to study. Apprentices are paid for full time, and at the end of each six-month period, wages will be adjusted according to individual progress. Requirements for admission include four years of high school, ability to pass required physical examination, satisfactory references, and maximum age limit of 21 years. At present the company has applications on file for more than three times the number of apprentices which can be accommodated.

tings up and fabric trades on "Weather-Sealed," a water-repellent; Per-San, a permanent fabric finish, and an antiseptic finish. She has lately been Director of the Bureau of Standards of Montgomery Ward in Chicago. Mr. Stark will be one of the sales representatives in rain, sports, snow togs and street wear for Impregnole "Weather-Sealed" products.

Borne Scrymser Co., New York.—Frank F. Fuller, since 1937 vice-president and director of Borne Scrymser, manufacturers of technical oils, resigned as of July 15. He joined the company in 1929.

Wagner Electric Corp. has appointed Howard W. Petty to succeed Brooks Faxon, who retires after 36 years as New England manager of the company. Mr. Petty was lately manager of the company's Buffalo area.

"The American's Creed"

The Rhode Island Warp Stop Equipment Co., Pawtucket, R. I., has distributed to its friends in the trade attractively produced wall copies of "The American's Creed" which reads as follows:

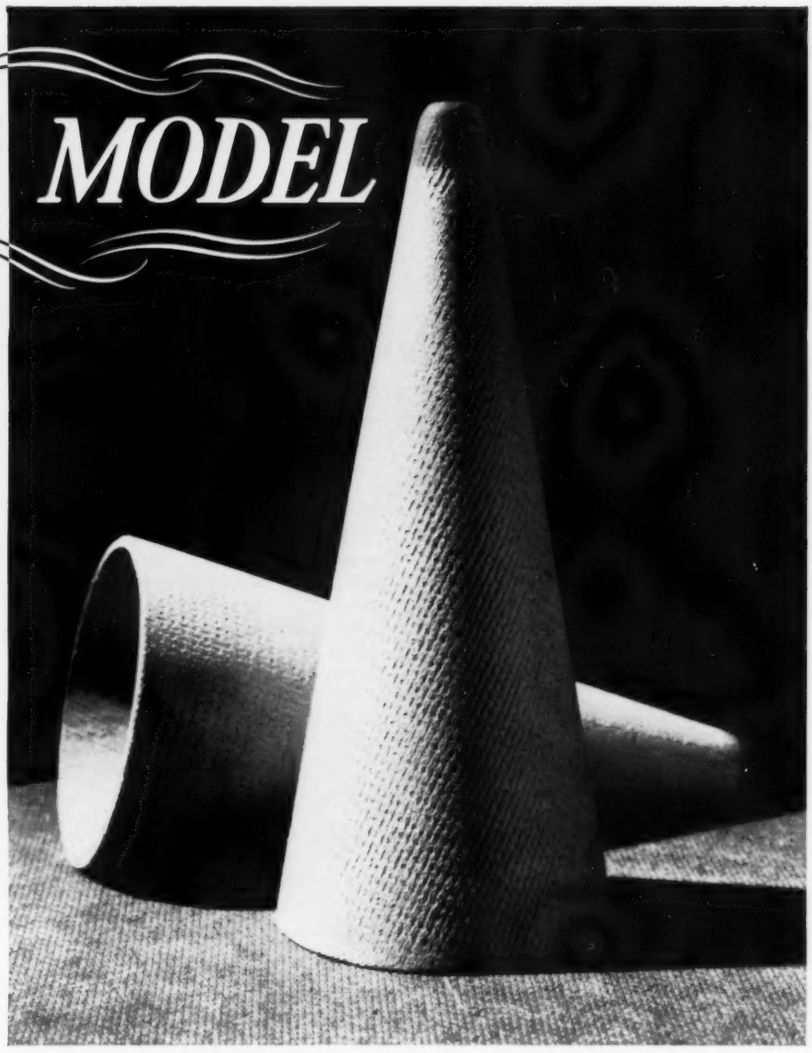
"I believe in the United States of America as a government of the people, by the people, for the people; whose just powers are derived from the consent of the governed; a democracy in a republic; a sovereign nation of many sovereign states; a perfect union, one and inseparable, established upon those principles of freedom, equality, justice and humanity for which American patriots sacrificed their lives and fortunes.

"I therefore believe it is my duty to my country to love it; to support its Constitution; to obey its laws; to respect its flag and to defend it against all enemies."

Warns Against Sabotage

A warning of impending disaster unless American manufacturers guard effectively against sabotage and subversive activities against the country's industrial plants, is contained in the latest of Charles P. Gulick's unusual "Talks-to-Employees" at the National Oil Products Co., Harrison, N. J. The letter was based on a release sent out by the National Association of Manufacturers. As president and chairman of the company, Mr. Gulick pointed out that it is not enough to have military preparedness; "we must also establish internal unity, internal security."

1941 MODEL



Improvements at frequent intervals take the place of new models in SONOCO Textile Paper Carriers. These improvements are designed to increase efficiency and lower costs. Thus the Velvet Surface Nutaper Cone of a year ago is outmoded by an improved Nutaper. It works on the same winding equipment, it does the same job in packaging yarn—but it does it better, more efficiently, and therefore cheaper. In the next year, or two, a new and still better Nutaper Cone will be developed and it will be a Sonoco product.

SONOCO MAKES *EVERYTHING* IN *PAPER CARRIERS*

sonoco

SERVES THE WORLD

PAPER CARRIERS

SONOCO PRODUCTS COMPANY

BRANTFORD ONT. | HARTSVILLE S. C. | MYSTIC CONN.

DEPENDABLE SOURCE OF SUPPLY

FREE FOR THE ASKING

Readers interested in literature reviewed on this page may secure copies by writing to Textile World, 330 West 42nd St., New York, giving their company connection, title of item desired, and date of issue in which it was reviewed.

Knitting Equipment. Wildman Mfg. Co. Illustrated folder describes and contains sample of cloth knitted on interlock machine; included is a photograph of this machine.

Mixers. Mixing Equipment Co. Catalog B-67 gives data on laboratory mixers in a variety of types and for various purposes.

Packing. Belmont Packing & Rubber Co. Catalog gives data on line of packing materials; each is pictured and described on a single page, making possible easy reference to particular types.

Gearmotors. Reliance Electric & Engineering Co. Bulletins Nos. 403 and 404, give, respectively, data on single-reduction gear motors and double- and triple-reduction types.

Feed Water Deaerators. Cochrane Corp. Publication 2540, in 16 pages, describes parallel down-flow principle feedwater deaerators, their uses and advantages; included are numerous explanatory photographs.

Air Conditioning. Parks-Cramer Co. June, 1940, issue of *Parks' Parables* describes characteristics and advantages of company's Airchanger system; included are two photographs showing installations of this equipment.

Variable-Speed Transmission. Ideal Commutator Dresser Co. Leaflet describes and pictures variable-speed transmission equipment of several types and shows how these have been installed on a variety of machines.

Loom Supplies. Steel Heddle Mfg. Co. Leaflet describes facilities for hard chrome plating of various loom supplies and points out its advantages.

Flooring Repairs. Flexrock Company. Illustrated folder shows how broken floors cause accidents, and how use of resurfacing compound can quickly eliminate danger zones.

Steel. Joseph T. Ryerson & Son, Inc. Bulletin gives description of wide range of cold finished steel bars carried in stock for immediate shipment.

Electrical Equipment. Trumbull Electric Mfg. Co. Circular 323 pictures and briefly describes line of multi-breaker load and surface centers; also defines application of each type.

Air Compressors. Ingersoll-Rand Co. 28-page catalog presents data on line of air compressors in sizes from 10 to 125 hp. and pressures from 5 to 2,500 lb.; describes units of double-acting, horizontal, crosshead type for moderate-speed, heavy continuous service.

Spraying Equipment. Spray Engineering Co. Wide variety of spraying, moistening, and spray-finishing equipment is described and pictured in Catalog G-100.

Packaging. Robert Gair Co., Inc. Sealing of corrugated and solid fiber containers is described in a 36-page booklet, which includes numerous photographs.

Fluorescent Fixtures. Day-Brite Lighting Inc. Bulletin F-32 contains 16 pages of data on fluorescent light strips, reflectors, and parts.

Water-Temperature Control. Powers Regulator Co. Two leaflets describe equipment for automatic control of water temperature in diesel and gasoline engines, air compressors, and a variety of other services.

Boiler and Tank Accessories. Steel Improvement & Forge Co. Booklet gives catalog and reference data on accessories for fired and unfired pressure vessels.

Steel. Lukens Steel Co. Spun heads for boilers, tanks, pressure vessels, and other uses, are described in a 132-page manual which includes a considerable amount of engineering data on the products covered.

Elastic Braiders. New England Butt Co. Catalog No. 38 describes line of round- and flat-type elastic braiders.

Stirring Equipment. Patterson Foundry & Machine Co. Four-page leaflet pictures and outlines advantages of company's Unipower stirrers.

Welding. Air Reduction Sales Co. Catalog 103 describes line of electrodes and electric welding machines; includes data on suggested applications of various types of electrodes, facts on physical properties, and suggestions on welding procedure.

Materials Handling Equipment. Lewis-Shepard Sales Corp. Catalog No. 21 contains 56 pages of data on various types of trucks, elevators, cranes, storage racks, and other items for handling materials in process.

Synthetic Resin. Calco Chemical Division of American Cyanamid Co. Leaflet describes Aerotex 105, a newly developed synthetic resin said to give an improved finish at low cost, and to shorten the finishing process. Another bulletin, No. 557, describes in detail application of the new finish.

Electric Motors. Westinghouse Electric & Mfg. Co. Totally-inclosed, fan-cooled, squirrel-cage motors from 1 to 200 hp. are described in data sheet 3105.

Anti-Friction Bearings. New Departure Division, General Motors Corp. 112-page textbook on selection of anti-friction bearings discusses factors affecting efficiency and performance of machines through use of anti-friction bearings.

Chain Drives. Whitney Chain & Mfg. Co. Catalog B-135 describes and gives data on line of silent chains for power drives.

Leather Packing. J. E. Rhoads & Sons. Folder describes leather packing material and contains diagrams illustrating typical applications.

Welding Electrodes. Lincoln Electric Co. Chart gives uses, physical characteristics, currents, procedures, and other data on 36 different electrodes.

Textile Machinery. Davis & Furber Machine Co. June, 1940 issue of *Davis & Furber News* contains article titled "The War and American Textile Production," and describes part modernization plays in expanding production.

Regulators. Allis-Chalmers Mfg. Co. Vol. 1 No. 1 of *Regulator News* describes advantages of transformer-type regulators; contains table for calculating feeder voltage regulator line drop compensator setting.

Water Conditioning. Permutit Co. Bulletin 2357 contains 12 pages of text and photographs relating to deaerating heaters, and gives methods for preventing corrosion of boilers and piping.

Air Circuit Breakers. Westinghouse Electric & Mfg. Co. 16-page, 2-color, illustrated booklet No. B-2243 covers line of circuit breakers in capacities from 15 amp. to 1,500,000 kva.

Fluorescent Lighting Equipment. Miller Co. Catalog section 2G describes continuous trough and individual fluorescent lighting fixtures; includes wiring diagrams and foot-candle data.

Packaging. Hinde & Dauch Paper Co. Portfolio gives case histories of numerous packaging problems and their solutions, together with new ideas and merchandising plans.

Textile Tools. Snap-on Tools Corp. Folder describes group of special tools brought out for use in various textile-mill departments.

Hoists. Wright Mfg. Division, American Chain & Cable Co., Inc. Catalog gives data on hoists from ¼-ton to 50-ton capacity, as well as information on trolleys and cranes.

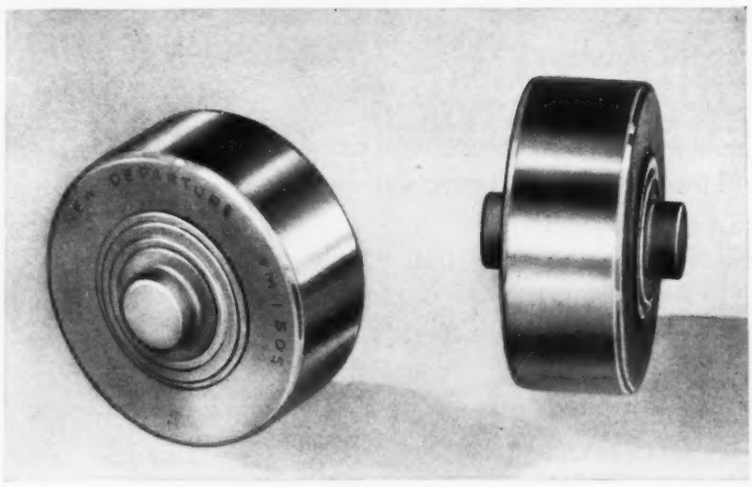
Electric Wire. General Electric Co. Descriptive sheet No. GEA-2733D gives data on Flamenol synthetic insulated wire—its features, types available, applications, etc.

Self-Oiling Bearings. Moraine Products Division, General Motors Corp. 72-page book lists great number of sizes of self-oiling bearings available without tool charge; also shows how to design for these bearings and how to install them correctly.

Thermometers and Pressure Gages. Brown Instrument Co. Catalog No. 6705 describes line of circular case thermometers and pressure gages for a variety of services; included are numerous photographs, drilling dimensions, and other helpful information.

Fluorescent Lighting. Westinghouse Electric & Mfg. Co. Booklet A-3618 is a 23-page guide to application of Mazda F lamps and equipment; answers many questions about d-c. operation, temperature effect in outdoor operation, color, stroboscopic effect, radio interference, and lighting costs.

Flexible Coupling. Link Belt Co. 12-page illustrated catalog No. 1845 contains price and dimensional data, selection tables, etc., on line of flexible couplings.



The New Departure Treadle Roll ball bearing developed especially for Draper Looms

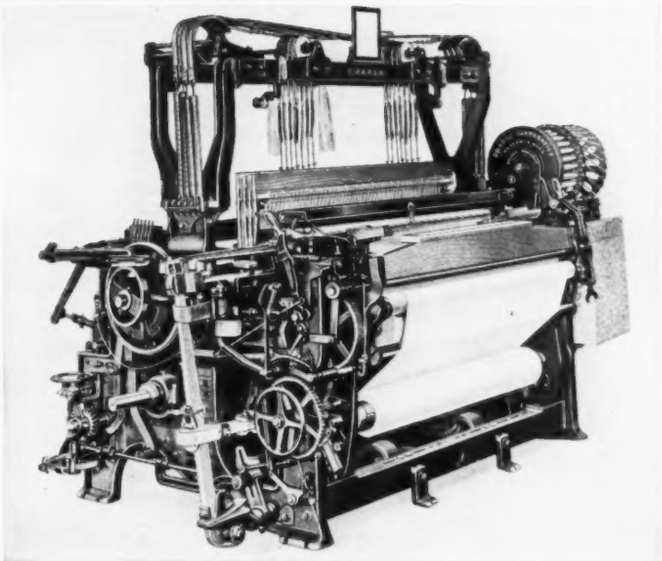
TO REALLY REDUCE LOOM MAINTENANCE

● When modern design results in lower maintenance costs—it means wider profit margins for machine users.

Alert to every possibility for betterment, the DRAPER CORPORATION, by use of New Departure's self-sealed treadle roll bearing, takes a decided step forward in reducing loom operating costs.

Made of high carbon, chrome alloy steel—heavily built to absorb shock—completely protected from dirt or lint—fully lubricated for long life, this "new departure" by New Departure practically eliminates shutdowns for roll replacements. Not only is cam life greatly increased, but this ball bearing is easy rolling, cannot rub at the sides of the treadle arm—and its hard, smoothly finished surfaces do not become clogged with accumulated lint and dirt.

Here is a truly modern improvement that really does pay dividends. New Departure, Bristol, Conn.



DRAPER LOOMS equipped with New Departure treadle roll ball bearings are better prepared than ever for higher speeds.

NEW DEPARTURE

ORIGINATOR OF THE SELF-SEALED BALL BEARING

2903

THIS IS NO. 22 OF A SERIES ON

GETTING THE MOST FROM WINDING

Information about winding designed to show improvements in winding equipment and new ideas in the winding operation

LUBRICATION OF NO. 50 WINDER

In the standard No. 50 head, the spindle bearings at A and the front Cam Shaft Bearing at B are now equipped with Oilite Bushings. These are porous bronze bushings impregnated with a year's supply of lubrication which is fed to the bearing surfaces through the pores. The bushing will last indefinitely if kept permanently saturated with oil.

As added protection for the spindle bearings, an oil reservoir is provided in the top of the frame, carrying a 6-months' supply which should be checked once a month. Oil reaches each bushing by means of a felt wicking, one end passed over the bearing, the other end resting on the bottom of the oil reservoir. The oil is drawn up, by capillary action, through the wicking, and penetrates the porous Oilite Bushing. Only enough oil is required in the reservoir to keep the wick saturated.

The oil level in the reservoir must be kept below the spindle bearing, so an overflow hole is provided in the reservoir. This hole is for overflow *only;* it is not intended to provide lubrication to the Cam and other parts below.

A high grade, light bodied oil having a Saybolt viscosity of 120 to 150 seconds at 100° F is recommended for the oil reservoirs. Socony-Vacuum *Velocite C*, Esso *Teresso 43*, Texas *Regal A*, Gulf *Harmony A* or equivalent are satisfactory oils.

Gear Gain

Mills have a tendency to keep the level of oil in the Gainer Case altogether too high. To prevent oil leaks, the level should be just high enough to cover the teeth and lower rim of the Cam Shaft Gear. This gear will carry the oil up to the groove (C) in the top of the Gainer Case Bushing. This oil lubricates the Cam Shaft and passes along the Shaft to the Cam and front Oilite Bushing (B). Through the centrifugal action of the Cam, the oil is also carried to the Cam Roll, Traverse Bar and Slide.

The supply of lubrication in the Gainer Case should be checked once a week but will last for a long period of time. When starting new cams, a little vaseline or very light grease can be spread on the cam groove.

Belt Gain

Oil is introduced into this Gainer Case through the oil hole at (D), which has a screw cap and leather washer. With the Gainer Belt removed, the case is tipped to the right until the oil hole reaches the "three o'clock position." Filling to this level will bring the oil up to the bottom of the Cam Shaft. This is enough for a long period, but should be checked twice a month.

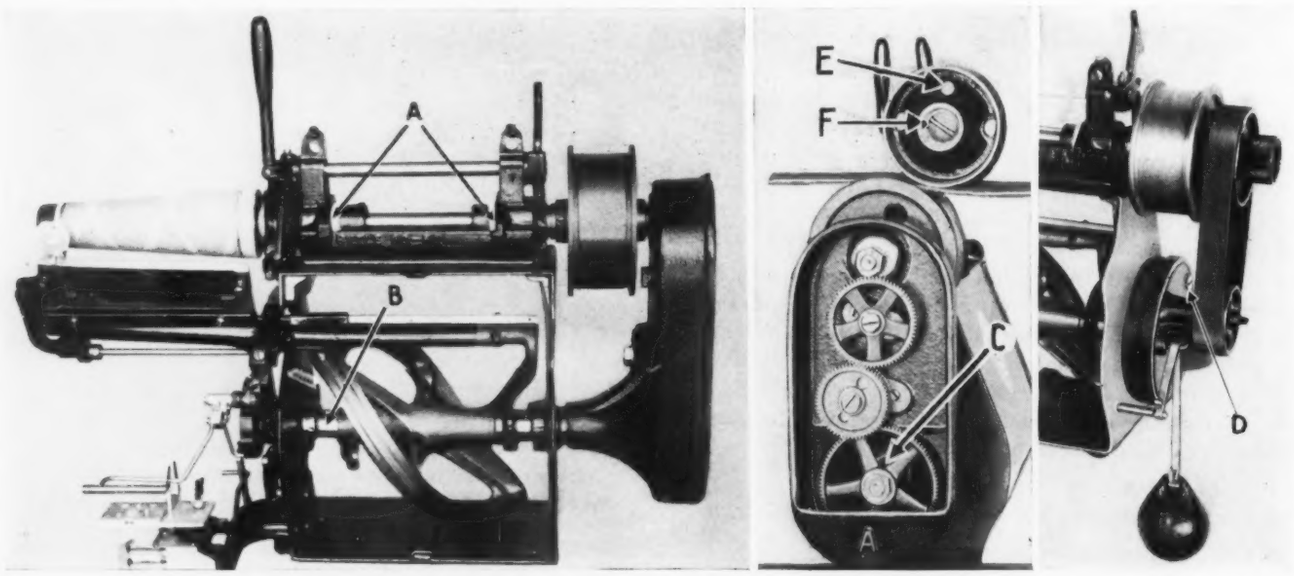
Idler Pulleys

Spindle Idler Pulleys are also equipped with Oilite Bushings. As an added protection, a grease chamber with Alemite Fitting (E) provides the pulley with a reserve supply of lubrication. A charge of light grease is sufficient for 6 months, but it is best to inspect the pulleys more frequently. On each side of the pulley there are two holes leading from the reservoir to the bearing; all except one contain a wick carrying lubrication to the bearing. The fourth hole (F) is open, providing an air vent to release air from the chamber as the grease is being introduced.

The following greases or their equivalent are satisfactory for Idler Pulleys: Keystone *No. 505*, Socony-Vacuum *MC Medium*, Esso *Castroleum 0½*.

The Idler Pulley Arm has an oil hole that should receive a drop of oil weekly.

On clutch-drive machines, the Idler Pulleys are chamber cored and have oil channels leading from the central oil chamber to the ends of the bearings. By removing the oil cap that holds the pulley in place, oil can be introduced with an oil gun up to the level of these channels. Due to the centrifugal force of the revolving pulley, a chain is required to bring oil to the bearing while the pulley is running. Idler Pulleys should be filled once a month to the bottom hole.



"THERE'S A UNIVERSAL WINDER FOR EVERY TEXTILE NEED"

UNIVERSAL WINDING COMPANY

PROVIDENCE BOSTON PHILADELPHIA UTICA CHARLOTTE ATLANTA

*Reg. U. S. Pat. Off.

THE OVERSEERS' CORNER

RAISING SALARIES

A PETE AND BILL DISCUSSION

"You'd think I didn't have enough to worry about without that young whippersnapper bothering me for a raise," fumed Bill as Pete came into his office to see him.

"What whippersnapper?" asked Pete innocently.

"Jack Reed, the so-and-so," growled Bill.

"Why I thought you said a little while ago that Reed was the best second-hand you'd ever had," volunteered Pete softly.

"W-e-l-l, maybe I did," stammered Bill, "but . . ."

"How long has he been working for you?" asked Pete just as softly.

"Five years. Came right out of Textile School. Spent about a year just working around the mill, and the last four as second-hand," was the answer.

"How much does he make?" breathed Pete sweetly.

"Twenty dollars a week," snapped Bill—getting irritated all over again.

"How long since he's had a raise?" asked Pete, as he mentally ducked.

"What do you think you are—the census man?" barked Bill, his patience all gone. "He's only been working as a second-hand for four years, I told you. Twenty dollars is a good bit of money for a young boy like him. I can go out of my office this minute and hire a dozen second-hands at $20 a week. That's the market price. Why should I pay more?"

Bill fumed as Pete came in and sat down

"Did you ever hear of a certain something called morale?" asked Pete, as he edged toward the door. "Do you know what a *voluntary* raise of a couple dollars means to a man? Do you realize that many a second-hand is making *less* than men *under* him? Don't you know you're just fixin' to lose a good man?"

"No, I don't," shouted Bill after the retreating Pete. "I'm not going to waste the company's money when I can get another man for the same price."

But he looked a little doubtful and worried as he slumped into his chair.

Do you favor *voluntary* increases to sub-operating executives?

Letters From Readers

Play Ball With Second Hand

"Confiding in Second Hands"
Pete & Bill, July, 1940

Editor, Overseers' Corner:

In reply to the Pete & Bill discussion on confiding in second hands, I will cast my lot wholeheartedly with Pete. As to how much an overseer should tell his assistant about the job they are both running or trying to run, I say tell him all you know and when you learn something new tell him that also. I think it is the duty of an overseer to give his assistant the benefit of his knowledge and experience. So far as the assistant knowing more about the job than the overseer, I think also that it is the duty of the overseer, not only to himself but to the company for which he works, to stay ahead of his assistant in both knowledge and training. Jobs now days are not run by secret formula but by cooperative effort, so one had better give his assistant all information possible. More overseers lose out because of uninformed assistants than because of wide-awake intelligent assistants who know their jobs and their boss. Since a great majority of the overseers today were promoted from yesterday's crop of assistants, I feel that if you do not confide in your assistant as far as possible you are doing him an injustice as well as yourself.

W. D. (*South Carolina*)

Understudy a Necessity In Textile Management

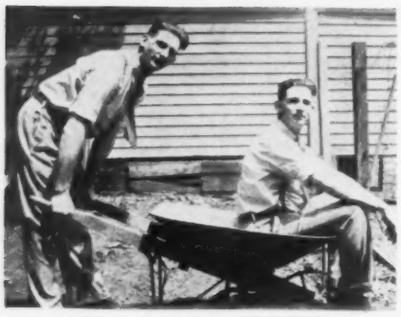
"Confiding In Second Hands"
Pete & Bill, July, 1940

Editor, Overseers' Corner:

About four years ago I visited a certain mill and found its comparatively new superintendent "fit to be tied." When I asked him how come, he said something like this:

"I have just finished reading the riot act to my overseers. A second-hand quit and we had to go clear outside the organization to get one. That overseer has eight section men and not a single one has been developed to the point

CONTRIBUTIONS to the letters and practical helps in "The Overseers' Corner" are paid for when published without regard to length. We use letters (not over 200 words) discussing the material on this page or any other pertinent matter whether of mechanical, managerial or just plain human interest. Those who contribute practical helps or kinks which are published (not over 500 words) will be paid additional for an appropriate sketch to illustrate their device. It is not necessary to submit finished drawings. Contributions of greater than specified length may be given consideration as articles. If these pages interest you —contribute something to them to interest others. Address Editor, Overseers' Corner, Textile World, 330 West 42d St., New York.



A. O. HEFNER, of Brookford (N. C.) Mills Division of A. D. Juilliard & Co., Inc., has worked out a system of rolling himself to work every morning in a wheelbarrow. When he told of this feat at the recent Southern Textile Association convention, there was some slight doubt as to his veracity. But when he produced the above picture, it was proof enough for us that Mr. Hefner is a man of integrity. (Editor's Note: After seeing this photograph several members of the industry are reliably reported to have signed the pledge.)

where he could make a second-hand out of him—and some of them were raised in his room. I told them that the next time this happens there will be two vacancies instead of one.

"Since I have been on this job only about 30 days I don't feel that it is my fault, but if we have to go outside for a second-hand or an overseer after I have been here a year the management ought to fire me, too.

"Another thing I told those birds was that I wanted any one of them to be able to run my job if I get sick, get promoted, or want to go fishing."

This superintendent seems to agree with Pete in his philosophy of how to handle subordinates, and I have watched him develop his theories into practice. They work for him, and I have seen the same theory work out in scores of other cases in my fifteen years' experience.

LOUI GREET, *vocational director, Parker School District, Greenville, S. C.*

Overseers Practical Helps

Shuttle Guards

On looms which do not carry shuttle guards as part of the standard equipment, weavers can be protected against flying shuttles by the simple and inexpensive guards shown in the illustration. Angle irons made of 1 x ⅛-in. strap-iron are placed at intervals on the front surface of the reed cap. The spacing depends upon the height of shed and length of shuttle, and should be such that the shuttle is caught between the top of the shed, and the irons when it attempts to fly out.

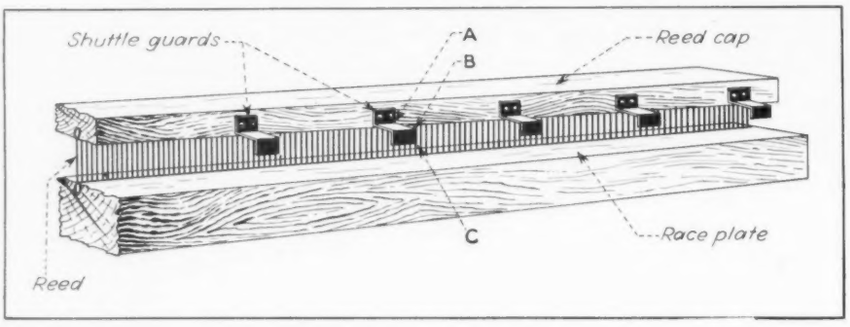
The distance *AB* depends upon the shuttle width; *AC* depends upon the height of the shed. To minimize dirt-catching, irons must be smooth, well polished, and painted.

R. J. F. (*Mass.*)

Welding Jig

Welded loom swords are often out of line because they were not welded true or they warped in cooling. The jig shown here provides a means of ending these misalignment troubles.

The base is a length of 8-in. channel iron. Properly spaced on and welded to its flat side are an angle iron and two studs. In the upright part of the angle iron are holes which correspond with the bolt holes in the top of a sword. The two studs are of size and spacing



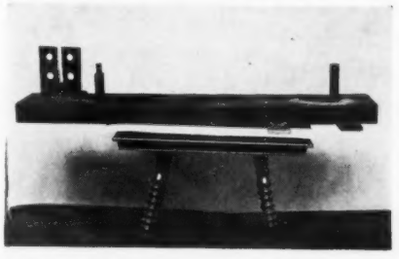
Angle-iron shuttle guards

FUN AT MIDDLESEX WORSTED'S OUTING

THE SECOND ANNUAL OUTING of Middlesex Worsted Spinning Co., Lowell, Mass., was held on July 27 at Nantasket Beach, Mass. There was not a somber moment in the day's relaxation. Buses carried 200 employees and their guests to the beach and song sheets, paper hats and novelties were supplied to all. Strips of tickets to rides in the amusement park were also supplied. The program of sports was climaxed by a comic bathing beauty contest. Above at left are shown the judges of this contest:

Norman Chadwick, mill superintendent; Albert Sifferlen, overseer of spinning; Edgar Vigeant, second hand. They awarded a compact to each contestant. The contestants, shown at right, are: Mary Longtin, Anna LaFreniere, Rose Lanseigne, Margaret Smith and Margaret Kunde. Committee in charge of outing comprised Messrs. Sifferlen, Prince, Kasper, Vigeant, Robinson, Barrett, Barnes, Costa and Chadwick. There was a shore dinner at the Nantasket Hotel.

FIRST AID CLASSES for industrial organizations were recently organized in Gaston County, N. C., by W. Lea Powell, safety director of the N. C. Industrial Commission. The object of this organization is to have the supervisory forces in industry trained in first aid. All the classes are to be taught by local instructors who have recently completed an instructor's course under Dr. Marshall, a member of the staff of the National Red Cross. It is hoped that through these classes frequency and severity of accidents due to carelessness, thoughtlessness, or negligence may be eliminated. Classes have been scheduled at community houses at the following mills: Victory Mill in South Gastonia; Gray Mill, in West Gastonia; and Ranlo Mill in East Gastonia. A fourth class has also been organized for Bessemer City and one is planned for Mt. Holly.



Welding jig prevents misalignment of loom swords

to fit the rocker shaft and pitman arm bearings.

A broken sword, slipped over the studs and bolted to the angle iron, is firmly held in its correct shape and the greater part of its length rests upon a flat surface. After welding, a sword is left on the jig until cold, and cannot warp during cooling.

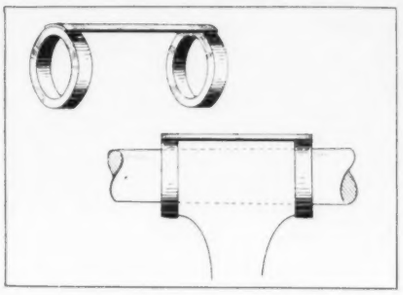
J. C. NORMAN (*Alabama*)

Housing for Open Bearings on Cards

Old cards with open bearings on workers and strippers give trouble because lint accumulates in the bearings underneath the shafts. The most frequent offender is the No. 1 stripper, which is thus raised into the worker wire. A simple home-made housing as shown in the illustration will keep these bearings clean.

The housing is made from two collars that fit easily on the stripper shaft, and a connecting strip of flat metal about $\frac{1}{8}$ in. thick. The strip is fastened to each collar by a cap screw, contains an oil hole in the center, and is the width of the opening in the bearing chair.

W. C. KNOPE (*Two Rivers, Wisc.*)



Improvised housing for open bearings and method of application

Instructions, Not Rules

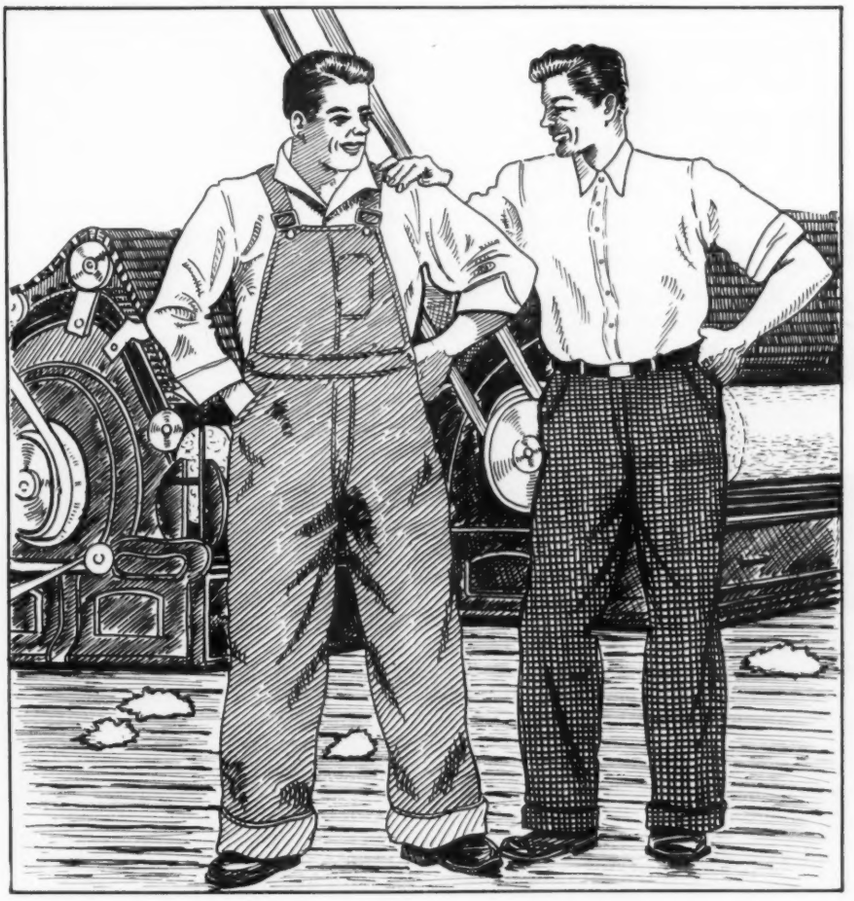
A helpful discussion of routine details in running a department

By RALPH BURRELL

Spartanburg, S. C.

DURING A MEETING of second hands of the carding department in a large mill, one of the men brought up the subject of rules that apply to the different jobs in the department. There was not a written or printed rule in that department at the time, and the discussion that resulted from this situation brought up some interesting points:

1. What is a rule?
2. Does anyone benefit by an oral rule? Do the employees really remember them?
3. Do the second hands on each shift use the same rules?
4. Do they use the same method in explaining rules to employees?
5. What kind of an attitude does each second hand have in reminding employees of rules?
6. Do you make a rule and then forget about it?
7. Do you think after explaining the rules of a job to a new employee that you have done your part and it is up to him to run the job?



I put my hand on his shoulder and said, "Tom, how many times a day do you lap your cards?"

8. Do you leave this impression with the new man?

9. Do the employees like to be reminded of rules?

10. Will they pass the buck from one shift to another because their second hand's explanation was different?

As a result of this discussion the overseer requested the second hands to make a list of the rules they use in connection with the operation of their shifts. Some of the second hands made a list of from 100 to 150 rules. At least they called them rules, but after thinking about them they had to admit that only about 10 or 12 were really rules and the rest merely duties to be performed in the operation of various jobs.

Instead of making a list of rules, one of the men made a "Set of Instructions" for the operation of cards which caused a lot of discussion.

It is not a "rule" for a speeder hand to clean rolls and gears or make good work, nor for a drawing hand to keep his job in good shape, nor for a card hand to lap a card to prevent singlings and doublings, nor for the picker hand to mix waste and weigh the laps correctly, nor for the opening room hand to keep the iron tie hooks out of the machines.

Everything in regard to running a job is not a rule; it is a duty to be performed. These duties are part of his job, and if he runs his job well he will do these things without a rule being passed to force him to perform them.

An overseer or second hand who relies on a set of rules for each process to run his job is in terrible shape. Why? Because his employees are confused and will resist being ruled. If an overseer or second hand will have patience enough to take time to instruct his employees in the details of their jobs, the only rules needed will be in regard to safety, conduct and health.

If you are compelled to make a change in the operation of a job, don't go to the employee and tell him it is "a rule" for him to do this. Study the matter carefully and be sure to find some points where the employee benefits by the change. Explain those to him.

Not so long ago our card hands while lapping cards would break off the tail ends and drop them on the floor. When they had finished lapping a line of cards they would walk back and pick up these tail ends. There would be pieces sometimes the size of your hand they would not pick up. This was bringing quite a lot of white cotton into the floor sweeps. To prevent this we got some small cans and informed the card hands it was the rule for them to drag this can along with them while lapping cards and to drop the tail ends in the can.

One day, I saw a card hand throw the tail end of a lap on the floor. I went up to him and put my hand on his shoulder and said, "Tom, how many times a day do you lap your cards?"

"Twice. Some days three times," he replied.

"You run 33 cards don't you?"

"Yes, sir."

"Some days you lay down 99 laps don't you?"

"Yes, sir."

"Now, if you break off the tail ends of all the laps and throw them on the floor you bend over 99 times, don't you?"

"Yes, sir."

"You straighten back up 99 times don't you?"

"Yes, sir."

"Well, don't you see your job will be less tiring and you will feel better at the end of the day if you will only drag that can along with you and drop your waste in it?"

"Yes, sir," he replied.

Our card hands are dropping their waste in the cans now, and our sweeps have very little good cotton in them.

How can you expect your employees to remember a long list of rules when you have to sit down and study them out yourself? Throw all your rules in the waste basket and start instructing.

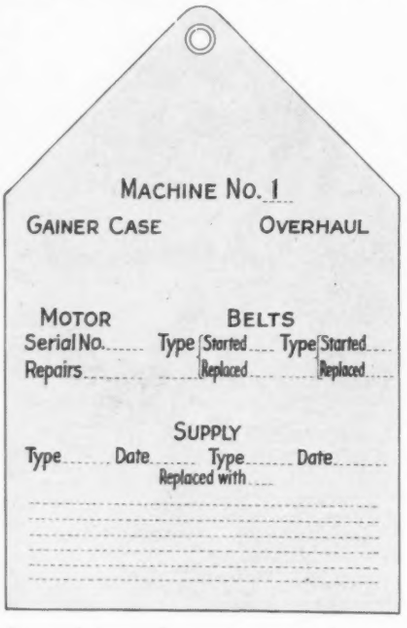
Hints on Winding

Suggestions for increasing efficiency of quill winders

By ALFRED KING, JR.

DO YOUR QUILL WINDERS require almost constant attention in order to keep the weavers off of your neck? Do your troubles seem to arise from small adjustments that will not "stay put"? Do your machines always seem to give the most trouble at the busiest times? Perhaps some of these suggestions will help you.

Keep machines clean. Do not let waste accumulate, especially if tint is used to identify yarns. Waste holds the tint which, being water, causes machine parts to rust and deteriorate much sooner than if kept clean.



Record tag of repairs and changes in equipment on quill winder

Check your winder spindles. A bent spindle makes a smaller, tapered package, which in most cases is undesirable.

Watch the "heels" of your quills. Heels should be approximately the same length as the traverse stroke. Short heels cause such troubles as uneven quills, sloughing off, etc. They produce a package that is not correctly shaped and, in many cases, the shuttle fur will not bind the bobbin correctly, causing slugs, lumps, and broken picks. If your winders are old, worn, and not uniform, do not use a cop-former gage, but set each end individually.

Do you have small humps at the start of your packages due to improper setting of traverse? Your quills may not all be the same size and, if they are not, the best thing to do is to use a medium quill with which to set the cop former. This reduces the amount of piling up on the quills that are too small and stops short heels caused by starting too far from the butt on the large ones.

Keep your packages uniform. There is no greater aid to efficiency than uniformity. In quilling large flat quills or automatics it is sometimes found that some quills will be uneven, or "piled up" in spots. This is usually an indication that either the hub or the traverse bar, or both, are worn, but is not always the case. Try bending the traverse-wheel tension spring toward the hub.

Do you have trouble with bunches piling up against the butt of the quill? Bunch builders are usually set to lay the bunch directly against the butt of the quill. If a quill does not fit clear back against the shoulder of the spindle, the bunch piles up. Setting the bunch out about ⅛ in. eliminates this trouble and does not interfere with the feeler motion on the loom.

Do you have trouble keeping your breakage levers repaired? Are they bent out of shape? Do only half of them work? Try taking them off. You will find that it improves the appearance of your machines, saves the operator's time in threading and the mechanic's time in keeping them repaired. In most cases it will have no ill effects.

When using a disk-type tension it is sometimes found that fuzzy cones cause the disks to become clogged with fuzz. When this happens, the tension drops, causing soft quills. This condition can be eliminated by taking the fuzzy cones off the disk tension and running them off over bobbins on the "D" unrolling supply.

On disk-type tensions where the yarn is run over a pulley-type eye, keep the pulley tight; that is, do not allow it to revolve. A more even tension will result.

Keep a detailed record of repairs or changes on each machine. It is not necessary to record small repairs—only major repairs, such as gears, pulleys, belts, general overhauling, connecting rods, motor repairs, and changes in the supply. Attach to each machine, or file in the overseer's office, a tag or card similar to the one shown. By referring to these, it is possible to know at a glance what has been done to any particular machine, and when.

Drafts For Double Cloths

Designer has choice of three harness arrangements; proper selection necessary

By R. A. C. SCOTT

AFTER MASTERING THE ART of constructing weaves for double cloths, as outlined by the author in various articles in TEXTILE WORLD, one has still the problem of producing satisfactory drawing-in drafts and chains. The harnesses controlling warp ends of the back cloth may be placed in one of three positions: (1) alternately with face harnesses, (2) in front of all the face harnesses, (3) in back of all the face harnesses.

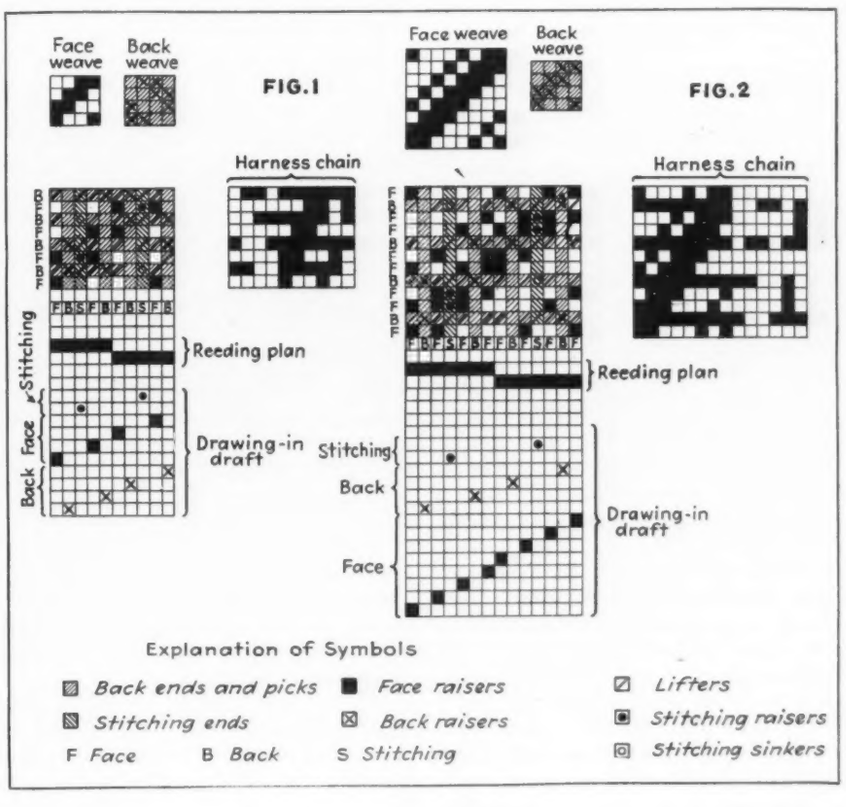
For simple double cloths, the first method may be adopted. However, if a compound face weave is employed, or if the warp arrangements of the two fabrics are different, or if there is a difference in size between face and back yarns, it is better to draw each series through separate sets of harnesses, and to place those harnesses through which the weaker yarns are drawn at the front. This means, in most cases, that the backing-yarn harnesses should be placed in front, since these yarns are usually weaker than those that form the face of the fabric.

Sometimes, however, it is found advisable to place in front the largest set of harnesses, with the smaller at the back. For example, there might be a warp arranged 2 face, 1 back, with eight face-weave harnesses as against four back-weave harnesses. The front harnesses, being heavier, would be placed in the front. This would result in placing less strain on these harnesses during weaving.

The harnesses operating stitching ends in center-warp-stitched fabrics (as described in TEXTILE WORLD, April, 1940, issue) may be placed either between face and back harnesses or behind both of these sets.

Fig. 1 shows a center-stitched double-cloth weave which illustrates the second of the three possible harness arrangements. In this, the warp is arranged 1 face, 1 back, 1 stitching, 1 face, 1 back. The filling arrangement is 1 face, 1 back. A $\frac{}{2}$ right-hand twill is used on the face, and a similar left-hand twill on the back. The reeding plan, drawing-in draft, and harness chain are also shown. As will be seen, ten harnesses are required; these are divided four face, four back, two stitching. In this example, the back ends are drawn in on the front harnesses, the face ends next, and the stitching ends at the rear. However, it should be noted that this particular weave could be equally well drawn in 1–10 straight, in accordance with the first of the three positions mentioned.

By way of illustrating the third position, reference is made to Fig. 2. In this, the warp is arranged 1 face, 1 back, 1 face, 1 stitching, 1 face, 1 back, 1 face. Thus, there are two face ends to each back end. As already mentioned, it is advisable in such instances to draw the face ends through the front harnesses, the back ends next, and the stitching ends at the rear. The drawing-in draft and harness chain illustrated show how this is accomplished.



QUESTIONS & ANSWERS

Defect in Rayon Taffeta

Technical Editor:

Inclosed is a piece of rayon taffeta with satin stripes. The taffeta is 150/90 yarn, while the satin is 150/44 yarn. Please give us your opinion as to the cause and method of correcting the defect in this fabric. We have been making this cloth for over two years and this is our first experience with this condition. (8662)

Examination indicates that there is some 40-filament yarn in the satin stripe. However, we doubt if this is the cause of the defect. In every stripe which has the defect the end causing it is more loosely woven than the other satin ends. This is clearly apparent when the fabric is examined under a magnifying glass.

It is our opinion that the cause of the trouble is uneven tension. During weaving, you should have no difficulty in detecting the ends which are not under proper tension and remedying the fault. If you are redrawing cones or bobbins, take particular care when spotting on the creel. There are various causes for uneven tension, and a careful check-up of your operations should reveal exactly where the trouble is occurring.

Picker Sticks

Technical Editor:

I would like to know (1) how many picker sticks are used by a firm that has 400 looms in operation, during one year's time. Also (2) What is the average life of a picker stick in operation? (3) How much do they cost? (4) How much time is required to replace a broken picker stick? (8500)

Due to many variable conditions which obtain on individual looms, it is impossible to give exact figures, but the figures which are given below are approximate: (1) it is possible to assume an average picker-stick life of approximately six months. On this basis, a 400-loom mill would require 1,600 picker sticks during the course of a year. (2) The average life of picker sticks will range from two to six or eight months per stick, although in some cases some sticks may have a longer life. (3) Generally speaking, picker sticks will vary in cost from 16 to 21¢ each, although some loom types may require more expensive sticks. Prices vary also both as to quality of sticks and as to size of sticks used on individual looms. (4) Time required to replace broken picker sticks is from 2 to 15 min. This period is subject to variation, depending upon how closely the new picker stick was made to fit the individual loom, and the type of loom to which the stick is to be applied, since some looms are much more simple than others and there is less preparatory work necessary when inserting a new picker stick.

Ends Crowded in Glass Tubing

Technical Editor:

I am inclosing a small sample of glass sleeving or tubing. You will note on the sides of the tubing that the ends are very close together for about 1/4 in. or so. What I would like to know is whether there is any way this can be overcome; that is, have all the ends uniform at edges the same as the body of the warp? I would like to have your comments. (8722)

The following measures should help to overcome this trouble, although they may not eliminate it entirely:

1. Use a special method of reeding on these two selvages. The last group of ends on each side (six or eight ends) may be reeded in every other dent instead of consecutive dents.

2. A special reed may be used; this reed with have coarser dents for the selvages. One-quarter to one-half coarser than the body dents should be sufficient.

3. Better results should be obtained by weaving the tubing on a loom where the distance from the selvage to box exceeds the width of the tube. This gives a slackness to each filling pick since the yarn will already be pulled from the bobbin or cop before being inserted into the shed. Thus, the tension of the pick should be the same throughout the pick. No shuttle bristles or other tension devices for filling should be used.

Removing Oil from Fabrics

Technical Editor:

We are having difficulty in getting the oil out of fabrics made from the two yarns of which samples are inclosed. A pure lard oil is used in spinning. Can you advise us concerning some sort of formula or compound which will remove the oil and odor from finished product? (8717)

From the twist of these yarns, we conclude that they are for weaving. However, the method of removal depends on the type of finishing the goods are to receive, as well as the weight of the finished cloths.

If the goods are to be fulled, with this type of yarn and cloth finished 16 to 18 oz., they can be fulled with solution composed of 4 oz. per gal. of a good grade of soap and 4 oz. per gal. of soda ash. If the goods weigh 32 to 40 oz. per yd., it will be necessary to use 8 oz. each of soap and soda ash per gal. The fulling soap should be so worked into the goods, by the time they are fulled to the correct width and length, that the wool oils are loosened sufficiently to come out in the washer. The fulled goods should be placed in the washer and cold water run in, with the gates open, for 10 min. This will flush off loose color, dirt, etc. The gates are then closed and just enough water at 120° F. run in to cover the folds. Then some solvent-type scouring agent containing cresylic acid is added to the washer. Figure ½ pail to a piece and dilute it 3 to 1 with water before adding. A half-hour scour, followed by a running rinse until the goods are neutral to phenolphthalein, will clean and leave them free of oil and smell.

If the goods are not fulled, but are scoured, some finishers prefer to use one of the synthetic detergents and soda ash. The scouring solution should be made up about 3 lb. of synthetic detergent and 3 lb. of alkali, such as soda ash or trisodium phosphate, for each 200 gal. of water in the washer. Scour 30 min. at 125° F., and rinse well. The goods will be clean, free from odor, and should contain less than ¾% extractable matter.

Sizing Jute Felts and Heel Lifts

Technical Editor:

We are forwarding samples of sized jute material used for heel lifts and slipper felts, on which we would like to get the following information: What material is used to size and stiffen this material and what equipment is necessary? (8729)

These samples apparently have been sized with a semi-thin-boiling starch. Probably both samples were sized with the same solution, but by different methods of application. In the case of the sample in which the burlap shows on one side, the size was applied to the burlap side only. That is, the goods went through the nip of a set of squeeze rolls with the bottom roll running in the size. This transferred the size to one side of the goods only. In the case of the thick punched felt, the goods were immersed in the size and then the excess was squeezed out through a set of squeeze rolls.

The essential equipment for doing

this work consists of a steam-jacketed, starch-cooking kettle equipped with a stirring device, a set of heavy squeeze rolls, a size pan with an immersion roll in it, and means for drying.

We suggest that you experiment with a 60 fluidity starch. Make thick and thin mixes, cooking the starch for ½ hr. and applying it hot until the correct stiffness and texture are obtained.

Half-Hose Yarn Requirements

Technical Editor:

We desire to know the approximate quantity of yarn required to make half hose of the following specifications: 16/1 cotton yarn, size 10 hose, 168 gage; 2/32 worsted yarn, size and gage as before; 36/2 mercerized cotton, size and gage as before. These hose are to be knitted on a Komet links-and-links machine. (8735)

It is rather difficult to make any accurate estimate of the amount of yarn needed, as this will depend upon length of sock, tightness of stitch, and the like. However, we shall give you the information in an approximate way:

2 ends 16/1 mercerized cotton, 31 oz. per doz.; 2 ends 36/2 mercerized cotton, 27 oz. per doz.; 2 ends 32/2 worsted, 22 oz. per doz.

You will note that two ends of each yarn are employed. This is because a single end would not be sufficiently heavy in the 168 needle machine.

Warp Ends Break

Technical Editor:

Inclosed is a swatch of 75/20/1¼ (Seraceta) sized. These ends break right at the cloth; in other words when the reed hits the cloth. Construction of warp is as follows: 6,280 ends, 43 in. reed width; 90 picks of 75-den. rayon, 35/37 turns; one way twist (voile). Any information you can give me as to how to avoid this trouble will be highly appreciated. (8731)

Our examination of the sample indicates that your construction is correct for this type of fabric. However, the warp ends appear to be a trifle harsh and brittle. We suggest, therefore, that a modification of the sizing formula would be advantageous. There are several measures which can be taken which will help eliminate the trouble with warps which are already sized.

First we advise turning the lay over center at least ½ in.; that is, when you bring the reed up to the fell of the cloth, instead of stopping there, turn the crankshaft at least ½ in. more. This may sound impractical, but, if you will try it, you will note the difference.

Placing a damp (not wet) cloth in back of the warp, or a pail of water under the warp may help. Spraying the warp with an oil softener will also be of assistance. Try to keep the temperature of the weave room around 75 to 80° F., and avoid sudden changes in room temperature.

How Many Spindles per Operative?

Technical Editor:

We desire to know how many drawing, spinning, and/or twisting spindles an average girl can operate on worsted yarns from 4/8 to 20s. (8655).

The question is too general for accurate answer. No information is given regarding production, sizes of bobbins, or weight of yarn on bobbins in the various operations.

In worsted drawing many conditions influence the number of machines which an operative can tend efficiently. We give the list of operatives actually used on a set of drawing producing 100 lb. per hr. of 3.3-dram roving:—

Operation	Machines	Operatives
Double-can gill box.....	1	1
2-spindle gill box.....	2	
4-spindle drawing box..	1	1
6-spindle weigh box....	1	1
8-spindle drawing.....	1	1
6-spindle finisher.....	2	1
8-spindle finisher.....	2	1
36-spindle reducer.....	2	2
36-spindle ring rover....	12	3
Doffers for ring rovers...		2
Total operatives per set		13

The operatives required in the spinning room will depend upon the counts spun, the system followed, and whether the work runs well. Time studies indicate that approximately 65% of an operative's time is available for actual piecing of broken ends, creeling, etc.

An expert operative can piece 8 ends or put 5 new bobbins in the creel in 1 min. In other words, an excellent operative could piece up 312 ends per hr. Suppose that in a test there were 52 broken ends per hr. per 100 spindles. $312 \times 100 \div 52 = 600$ spindles per spinner, if the spinner did nothing but piece broken ends. If the operative is responsible for creeling, the number of spindles per operative will have to be reduced. When a spinner must do everything except doff, 200 to 300 spindles per operative are enough for the range of counts given.

Similar reasoning holds true for the twisting process. When yarn is wound before twisting an operative can handle more spindles, because creeling is reduced. When twisting direct from spinning bobbins, the size of these and also the size of the twister bobbins are important.

Knitting Stockinette Beef Tubing

Technical Editor:

We are interested in knitting stockinette beef tubing on a 12-cut rib machine with a 13-in. cylinder, from 30/1 yarn. The cloth is to weigh 6.15 lb. for 100 yd. We have been experimenting with knitting this fabric on a rib machine, leaving out the dial and running with a long stitch. However, we have not been able to get the required weight without the yarn cutting. Any information you can give us with reference to a method for knitting this fabric will be appreciated. (8715)

Your trouble is caused by stitch cams or by top of cylinder. The first thing to do is to see that the top of the cylinder is perfectly smooth, and that slots are not worn back. If the slots are worn back, this can be remedied by having a little taken off and repolished. Having done this, the stitch cams should be grounded between 45 and 50%, bottom of cams to hold down one needle only. Yarn holes in carriers should be well polished. If these things are done, the machine should run properly.

Trouble in Fulling

Technical Editor:

We will appreciate your help on a question concerning the fulling of pieces which are made partly out of garnett stock containing mineral oil. Our spinning emulsion also consists partly of mineral oil, and when fulling these pieces the mineral oil together with the soap makes an almost watery solution. Are there any special chemicals or soaps that will be more resistant to mineral oil, and give us a quicker result in fulling? (8684)

This trouble is probably due to the fact that there is not enough alkali in your soap mixture to overcome the acid from the mineral oil which is in the cloth. We would suggest that you make up a soap solution containing 8 oz. of soap and 6 oz. of pure alkali to the gallon. This should be sufficient to overcome the acid in the goods, and make the soap stand up in the fulling mill. Or, you might scour the cloth before fulling, and use a heavy bodied soap in the mill, to accomplish the same results.

Cotton Mill Fires

Due to a typographical error in the table on page 64 of our June issue, giving the analysis of cotton mill fires, the percentage of claims and of total damage for jacquard weaving were stated to be 22.66 and 22.89, respectively, whereas the figures should have been 2.66 and 2.89, respectively.

LOOMFIXERS' MANUAL

RAYON AND SILK SECTION—Chapter V

By H. E. WENRICH

The Lay

LOOMFIXERS will find nothing more indispensable than a complete understanding of the lay motion. On the lay rests the burden of successful running of the shuttles, so it should be accorded great care. Faulty lay motions are responsible for a great deal of damaged fabric. They control and are in motion with the reed, crankarms, rocker shaft, and incidentally the take-up and let-off motions. The lay proper will be discussed in this chapter, and various of its associated parts will be covered in succeeding chapters.

When new looms are installed, during truing up various adjustments are made on the lay motion. Therefore before a warp is mounted it is advisable to run a new loom for a few days, with a shuttle in place, so that any loose parts or improper adjustments can be corrected. Similarly, after looms have been in operation for a number of years, the lay ends often become damaged and the raceplate worn down or broken, especially at the center-filling-feeler well. And there are many other minor defects which may become major if left without attention.

Instructions on taking care of the lay in a workmanlike manner apply to practically all types of looms. On some the lay, as well as a few other of the parts illustrated in the various sketches in this chapter, may differ slightly. Also there are some adjustments necessary on one type, which are not required on another. However, a study of one type will give fundamental information which can be applied to others.

Many raceplates are attached to the lay by means of glue and small brads. If one attached in this manner becomes loose, it should be taken care of at once. Remove the entire plate, scrape the hard glue entirely off the bottom of the plate and the top of the lay, and sand the wood down to a clean, smooth finish. Next, brush a high grade of glue on each of the parts to be joined. When the glue has a tacky feel, apply the raceplate to the lay in correct position. Weight down its entire length until the glue has set. After the weights are removed, place brads through the raceplate in the positions shown, using a fine pin punch to drive below the surface of the wood.

On drop-shuttle-box type looms, lay ends are occasionally damaged as shown at *A* in Fig. RS20. Damage of this type is caused by binding shuttle boxes which fail to lift correctly. As a shuttle is forced forward on the pick, the shuttle point is driven into the lay end. This may either split the end or dig under the raceplate and crack it. When boxes drop too early, the incoming shuttle is pressed down on the lay end. This also may result in broken ends.

To repair lay ends damaged in this manner, cut the raceplate along dotted line *B*, and remove the damaged piece. Replace with a new piece fitted to make a neat and satisfactory patch.

The narrow piece of raceplate at *C* is also often broken off. This narrow strip in the back of the center-filling-feeler well is of utmost importance in preventing warp ends from dropping down into the well and catching on the edges of the raceplate as they are subsequently lifted upward. To repair, cut along dotted lines *D* and *E* with a hacksaw, remove the broken section and replace it with a new piece cut to the proper shape. Be sure to remove all old glue, and to reglue the patch exactly as if applying an entirely new raceplate. Always dress all repair patches flush with the balance of the raceplate, so no uneven surface will cause the shuttle to be driven out of its true line of flight.

COVERING RACEPLATES with cloth to cushion the shuttle blows on the ends results in numerous advantages. When raceplates are left uncovered, shuttles often bruise warp ends, causing small smashes, shuttle marks, and shiners. There are several fabrics which are adaptable for this use. Among these, cotton tape, billiard cloth, and corduroy are most usually used. For heavy, hard yarn cotton tape is suitable as well as being lowest in cost, but for fine or soft yarns, corduroy has advantages.

To apply such a covering, first make a very light application of a good grade of glue to the raceplate. Then carefully put the fabric strip in place. Note, at *A* in Fig. RS21, that the covering is attached at the left end of the raceplate on a slight angle. This forces the shuttle to raise slightly in the front, forcing it against the reed and preventing it from flying out. On the opposite end, the covering is brought down over the brass lay-end cover *B*, and fastened with screws driven into the end of the lay. This covers the top screws, preventing chipped shuttle bottoms which might tear out ends.

After the glue has set, cut out the piece over the center-filling feeler well. Use a great deal of care in this task, so no glue is left exposed to cut warp ends. Also, round the front edges adjacent to the feeler well, as shown at *C*, to prevent ends from catching while the loom is in motion. Some loomfixers prefer shellac or water glass for the above purpose; the writer's preference is a high grade of glue. The expense is not much greater, and a few pennies saved may result in damaged merchandise when the covering begins to wear through.

In removing worn out raceplate covering, the old glue can be soaked with water to soften it up, after which it is quite easily taken off.

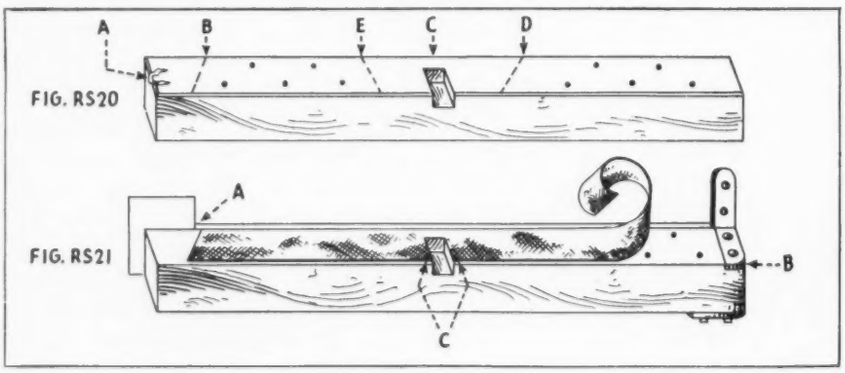


Fig. RS20. Sketch showing parts of lay end and raceplate which frequently become damaged. Fig. RS21. Diagrams illustrating way in which fabric covering can be applied to raceplates

LOOMFIXERS' MANUAL

COTTON SECTION—Chapter XI

By IVAR MOBERG

Filling Feelers

FILLING FEELERS, also known as filling detectors, serve to indicate the necessity of filling replenishment just before the filling on a bobbin is exhausted. They are used with rotary-battery, stationary-magazine, and shuttle-changing devices. Feelers used on cotton looms in conjunction with either rotary battery or stationary magazine are usually of sliding, single-contact mechanical type. The caliper feelers sometimes employed are usually of the double-contact type; however, they will not be dealt with here, since sliding feelers are used on the great majority of looms.

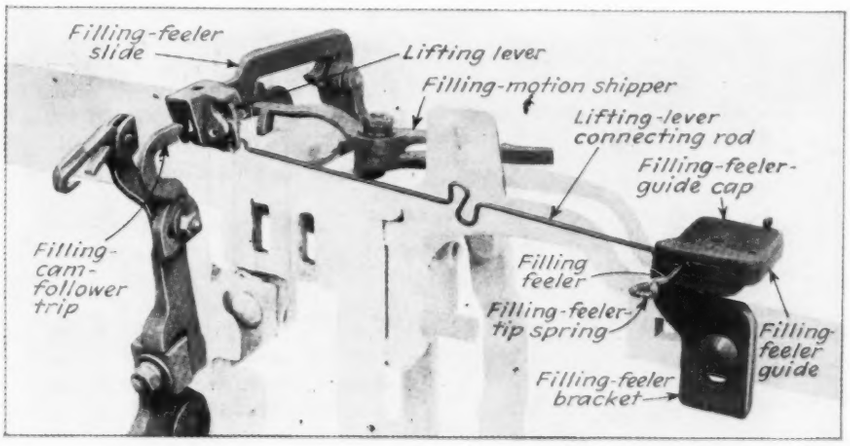
Fig. C78 shows a Draper feeler of the sliding, or side-slip, type. The tip of the feeler is either corrugated or has a piece of a helical spring around it to form a rough surface at the point of contact with the filling on bobbins. As long as the tip contacts the filling, it sinks into the yarn and the feeler is pushed straight back as the lay moves over the front center. However, when the filling is exhausted, the tip of the feeler comes in contact with the smooth bobbin, and slides laterally on the bobbin, thus indicating need of filling replenishment. With this feeler, as with all sliding feelers, a bunch of filling must be built up at the base of the bobbins before the regular winding commences. The length of the yarn in the bunch should be equal to at least four picks, to insure against its running out before the transfer.

This Draper feeler is extremely simple in construction and quite sensitive. There are only two moving parts, as can be seen in Fig. C79, which shows the assembly with the cap removed. Setting and adjustment of this feeler is simple, but incorrect adjustment often results in failure to indicate transfer. To set, proceed as follows:

With an empty bobbin in a fully boxed shuttle, and the top of the feeler case level, square the feeler case with the lay. Temporarily tighten the feeler case to the feeler bracket in this position. Move the feeler bracket laterally on the shipper-lock casting until the outside of the feeler case lines up with the center of the middle ring of the bobbin as shown. Use a straightedge held against the outside of the feeler case for this alignment.

Turn the loom over until the bobbin in the shuttle just clears the tip of the feeler, and so adjust the height of the feeler that the tip will be $\frac{1}{16}$ in. above the center of the bobbin, with the shuttle resting on the box plate. This will take care of any rising of the shuttle in the box when the loom is running.

Now, move the lay to extreme front center and advance or retard the feeler case until the side-slip of the feeler on the bobbin has brought the feeler to within $\frac{1}{16}$ in. of the limit of the slot in the feeler case. Move the feeler by hand to ascertain there is play between the feeler and the end of the feeler slot in the case. Check again with a square to make sure the feeler is at right angles to the lay.



Copyright 1932, Draper Corp., Hopedale, Mass.

Fig. C78. Draper filling feeler

Move the loom until the filling-cam follower rests on the lowest point of the filling-stop-motion cam, and so adjust the filling-cam-follower trip, Fig. C78, that it will be $\frac{1}{8}$ in. above and $\frac{1}{8}$ in. in back of the lifting lever. On looms on which there is no individual height adjustment of the filling-cam-follower trip, the filling-cam follower itself must be adjusted until the proper height of the trip above the lifting lever is obtained. In such cases, of course, the filling stop-motion will have to be readjusted before completion of the adjustment of the trip in relation to the lifting lever.

Now attach the connecting rod to the lowest of the two holes in the lifting lever and adjust its length, by opening or closing the bends, until the free end of the connecting rod is within $\frac{1}{32}$ in. of the feeler in the case. Make sure the free end of the connecting rod is smooth; otherwise it will have a tendency to dig into the feeler and prevent it from sliding.

The feeler is now properly adjusted and any alteration will only make it less efficient. Some loomfixers set the feeler case at an angle to the lay and bend the feeler, to make it slide more easily. The writer has never found this to be advisable; in every instance when the feeler was readjusted to correspond to the above instructions, a noted improvement resulted.

If the feeler does not indicate transfer with the above settings, it is probably due to one or more of the following causes, in the order given:

1. Lack of oil in feeler case.
2. Bobbin not properly designed, with relation to sliding feeler. Sometimes, sharp and deep grooves extend over the surface contacted by the feeler and prevent it from sliding on the smooth portion of the bobbin barrel.
3. Feeler binding in case, due to bending. The feeler should under no circumstances be bent, as the correct shape is given it by the loom builders. If it becomes bent accidentally, it should be straightened.
4. Rough bobbins and/or improperly built bunches at the base of bobbin.
5. Connecting rod with sharp end digging into the feeler, preventing it from sliding in time for the lifting lever to become engaged with the filling-cam-follower trip before the trip

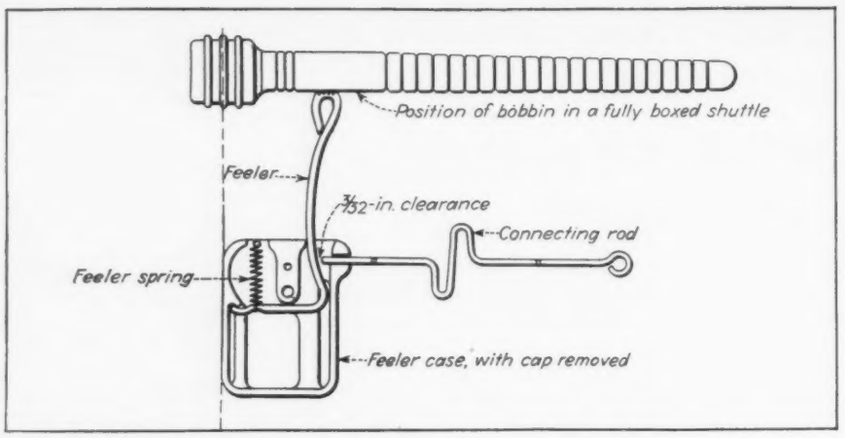


Fig. C79. Draper feeler with cap removed to show assembly

has passed the point of engagement.

When full or nearly full bobbins are ejected, the cause is generally rebounding shuttle, or too much side play in the filling-feeler slide. In the latter case, vibration of the loom may cause the lifting lever to jump into the path of the filling-cam-follower trip.

Fig. C80 illustrates a Crompton & Knowles sliding feeler, with the case cap removed to show the simplicity of the feeler assembly. To set and adjust this feeler proceed as follows:

With an empty bobbin in a fully boxed shuttle, move the lay forward until the empty bobbin is just about to contact the feeler blade. So adjust the height of the feeler stand that the blade will be slightly above the center of the bobbin. This will take care of any slight rise of the shuttle in the box when the loom is running.

With the inside of the feeler case at right angles to the lay, move the feeler stand laterally until the feeler blade contacts the bobbin approximately 1¼ in. from the base of the butt. If the feeler operates upon the chopper lever through the medium of a trip plate, there should be a $\frac{1}{16}$ in. space between the end of the chopper lever and the upper point of the trip plate.

Move the lay to extreme forward position and advance or retard the feeler case on the stand until the feeler blade is forced to slide 1 in. on the bare bobbin. In this position, tighten the bolt holding the case to the stand. Check to make sure the right angle between feeler case and lay has not been disturbed.

Bring the transferrer down upon the bobbin in the shuttle and adjust, by bending if necessary, the upright angle of the feeler slide until there is $\frac{1}{16}$ in. clearance between the lug on the transferrer and the upright angle of the feeler slide when the feeler is pulled back to the limit. It is necessary that the feeler be so set that it will be withdrawn from the shuttle when the transferrer moves down in transferring a bobbin.

If, with the above setting, the feeler should fail to indicate transfer in time, the case may be swung slightly to the right, so that the feeler blade will contact the bobbin at a sharper angle and thus slide more freely on the bobbin. If the transfer indication is too early, the case may be swung slightly in the opposite direction. Keep the feeler well but sparingly lubricated with a good grade of light oil.

Fig. C81 shows another Crompton & Knowles sliding feeler. To set this feeler proceed as follows:

Place an empty bobbin in a fully boxed shuttle, and move the lay forward until the bobbin is about to touch the feeler blade. Turn the adjusting screw in the feeler stand under the feeler case until the feeler blade will be $\frac{1}{16}$ in. above the center of the bobbin. Tighten the locknut in this position.

Turn the supporting bushing in the base of the feeler case until the lateral position of the feeler case is such that it will just clear the side lug on the transferrer, then tighten the nuts holding the bushing in place.

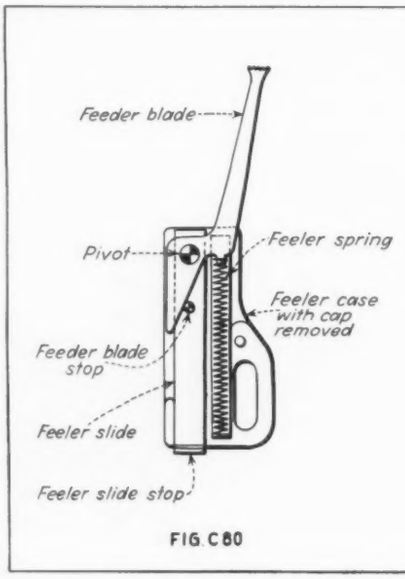
Adjust the angle of the feeler blade, by turning adjusting screw *A*, until the feeler blade contacts the bobbin approximately 1¼ in. from the base of the butt. Then tighten the locknut on the adjusting screw.

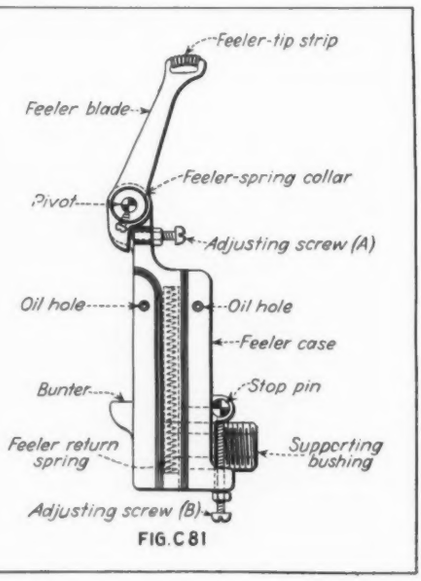
Move the lay to extreme front center and turn adjusting screw *B* until the feeler blade will slide approximately 1 in. on the bobbin. In this position tighten the locknut on the adjusting screw.

The side lug on the transferrer must strike the bunter on the side of the feeler case, so that the feeler blade will be withdrawn from the shuttle during the bobbin transfer. Depress the transferrer until it touches the bobbin in the shuttle and make certain the feeler is out of the way of the incoming bobbin.

This feeler has two adjustments for the timing of transfer indication. For early indication adjusting screw *A* can be turned clockwise to give a sharper angle of contact with the bobbin, and/or the tension of the coil spring inside the feeler-spring collar can be reduced by turning the spring collar. Similarly, indication can be made later by opposite adjustment. However, guard against having the spring tension so great that the feeler blade will break the filling before it slides on the bare bobbin.

Place a drop of light oil once each 24 hr. in each of the two oil holes in the top of the feeler case. Also lubricate the pivot of the feeler blade with a light oil.





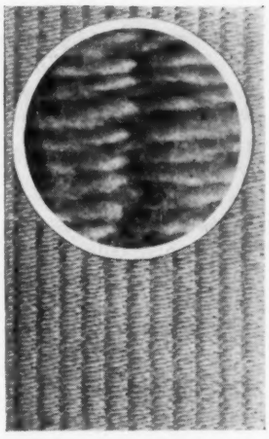
Figs. C80 and C81. Two designs of Crompton & Knowles sliding feelers

STAPLE COTTON FABRICS

By JOHN HOYE

Fabric Technician with W. Harris Thurston, New York

This fifty-fifth installment of Mr. Hoye's series of articles on staple cotton fabrics — which began in the January, 1936, issue — continues the discussion of cut-pile fabrics.



Uncut corduroy; 39 in., 48x120, 1.40 yd. —unbleached singles warp and filling

Corduroy Fabrics

THESE HAVE velvet-like cord effects running length of the fabric. They are generally heavier than velveteens; lighter weights are sometimes referred to as velvet cords. The fabrics are made with two fillings—ground and pile, and one warp. Ground picks interlace tightly with warp ends to form the foundation fabrics. They can be woven in a plain weave—known as "tabby back," or a twill weave—called "twill back." In the better grades of fabrics, a twill weave is used because it allows the weaving of more ends and picks per inch.

The pile filling interlaces with one or more warp ends and then floats in a rib weave, using alternating short and long floats. For example, each pick may weave with the warp ends for one repeat of the weave as follows: over four, under one, over six, under one. The pile picks float over the same warp yarns throughout, forming the filling ribs. The width of the cord is governed by the length of floats used; the longer the floats the wider the cords will be. The number of ribs, cords, or wales varies from four to sixteen to the inch.

The density of the pile depends upon the number of picks used, as well as on the proportion of pile picks to ground picks. The more picks used and the larger the ratio of pile picks to ground picks, the greater is the density of the pile. The proportion of pile to ground can be two, three, or four picks of pile to one pick of ground.

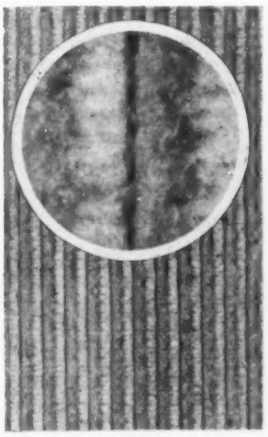
The number of warp ends is small compared to the number of picks, and strong warp yarns are necessary. Single warp yarns are used in the cheaper and lighter-weight fabrics; better grades of corduroy are usually woven with ply-yarn warps.

After the cloth is woven, the floats of the pile filling, also known as "races," are cut in their center. After cutting, the fibers tend to spring upward and later are brushed up to form the pile in ridges or cords. These cords are round, with the longest fibers in the center (formed by the longer floats) and the shortest fibers on each side (formed by the shorter floats).

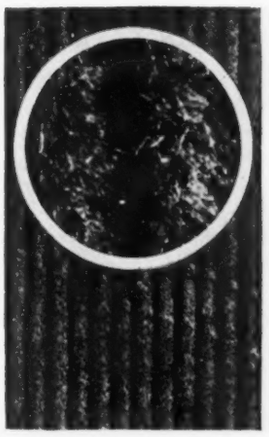
To assist the cutting operation, the face of the cloth is treated with a lime paste. The back is treated with a glue to stiffen the fabric and prevent short pieces of filling pile from being drawn or pulled out during cutting. If, later, the glue is not entirely removed, it causes an objectionable odor.

Cutting of corduroys is done by hand or by machine, usually the latter. If cut by hand, a few yards of the cloth are stretched tightly on a frame and the races cut one at a time. The operator inserts a sharp, pointed knife under a race and cuts along the center.

In machine-cut corduroys, the fabric is passed under circular revolving steel



Cut corduroy before singeing and scouring



Dyed and finished corduroy; finished 36 in., 9 wales per in.

knives spaced in accordance with the races or wales in the fabric. The knives, about 3¼-in. in diameter, are set in a revolving shaft. A guide with each knife is inserted by the operator under each float of pile. Each knife blade passes partly through a slot in its guide and cuts through the center of the wale or race. To insure that the cutting is carried out correctly, automatic stop motions stop the machine if a knife guide slips out of its wale or does not operate correctly.

After the fabric is cut, it is scoured, brushed, and singed to obtain a smooth, round cord effect. Afterward it is dyed and finished.

Corduroys can be piece-dyed or printed with plaids, stripes, or other patterns. They are sometimes duplex printed (printed two sides) to simulate woven designs.

Principal uses are for boy's clothing, pants, jackets, knickers, play suits, snowsuits, men's and women's sportwear, slacks, bathrobes, children's skirts, dresses, handbags, hats, upholstery, and draperies. Embossed design corduroys are used as casket cloths.

Examples of Corduroys:

	Warp	Filling Pile & Back
40 in. 46x116 Straight back	16/1	13/1
40 in. 70x250 Twill-back pin wale (narrow cord)	80/2	50/1
40 in. 80x146 Straight back	30/1	20/1
39 in. 56x210 Straight back	60/2	30/1

Most corduroys are sold 36 in. wide; finished weights 7½, 10 and 11½ oz.

Yarns used: Warp: 20/2 to 80/2; 16/1 to 30/1, combed. Filling: 12/1 to 60/1, combed, soft-spun.

TEXTILE PERSONALITIES

ALBAN EAVENSON

Alban Eavenson is tall, thin, gray-haired, bespectacled; his voice is soft and gentle. There is something of the mystic about him. Your first impression might be that here is a philosopher, a dreamer, one who has remained aloof from the stern realities of life. Such a casual appraisal, however, would be misleading. For nearly 40 years he was president of Eavenson & Levering, Inc., wool scourers, Camden, N. J. Under the guidance of Mr. Eavenson and his partner, J. Walter Levering, the firm grew from a small start in 1899, until it became the largest of its kind in the country.

Alban Eavenson—busy with extra-curricular activities

In 1935 he resigned as active head of the company, but if anything, he is busier now than before. He still retains a directorship in the wool-scouring firm. He still keeps up his interest in public affairs. He still is an active participant in the work of numerous textile and allied associational groups. He still maintains in his home a well-equipped laboratory in which to carry on research projects which have fascinated him ever since he first studied analytical chemistry at Lehigh University in the late '80s. And he still finds time for his favorite recreation: fishing in the trout streams of New York's Catskill Mountains.

Here is a brief resumé of the many important posts which Mr. Eavenson has held or now holds: In 1933 he was elected vice-president of the U. S. Institute for Textile Research. Prior to that time he was a member of the Institute's board of directors. In 1936 he was vice-president of the A.A.T.C.C.; in 1938 the Association selected him as its president. During the last three years he has been one of five advisors to the Textile Foundation. He was active in the work of the Associated Wool Industries, serving on its directorate. He is a member of the Instruction Committee of Philadelphia Textile School; and an honorary member of Alpha chapter of Phi Psi, national textile fraternity.

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MILDRED G. BARNWELL

"I've been in this cotton business as long as anyone in this room." With these words, a girl electrified a conference of textile-association executives not so long ago. The girl was Mildred G. Barnwell, executive secretary of the Southern Combed Yarn Spinners Association, at Gastonia, N. C.

By way of explanation, she went on to say that she had been born in a cotton patch (probably not literally) down in the Deep South—in Greenwood, Mississippi, in the heart of the Delta. The lives of her family and forbears had been tied up with cotton—and hers is now.

After graduating from National Cathedral School, in Washington, D. C.—where incidentally her daughter Gwin is now carrying on the family tradition—she studied law in the office of her father, Capt. Sam L. Gwin, in Greenwood. After her marriage, she moved to Gastonia in 1923, and later (in 1930) got what she describes as the last of the available jobs—in the office of the Gaston County Manufacturers Association, now the Southern Combed Yarn Spinners Association. In 1938 she was elected executive secretary, and today runs the show, under a succession of brilliant presidents which that group seems always able to supply.

She is one of a triumvirate of women textile-association executives. Irene Blunt has already had a spot on this page. The third, Alice Moore, will be here later. They are giving the men a run for their money.

Mrs. Barnwell's father gave her flying lessons in 1927—and she soloed. Today she confines her flying to chasing around the country on association business. And so our photographer caught her in a characteristic pose.

Secretary Barnwell frequently travels by plane

She golfs, swims, and rides (mostly on Governor Groves' horses at Albermarle, N. C.). Her hobbies are her daughter Gwin, her job, and southern folk-lore.

And she writes for TEXTILE WORLD (Advt.).

NEWS OF THE MONTH

Institute's Promotion Campaign

"Let us Re-discover Cotton—look at it with new eyes, see it again for the first time . . . then give it the glad hand that a new, glamor fabric should get" is the idea back of the 10 million bale consumption program to cost $80,000 which will be undertaken by the Cotton-Textile Institute.

Accompanied by M. T. Mermey, recently employed by the institute to handle promotion work, and armed with a chart showing the comprehensive plans of the promotion program, Dr. C. T. Murchison, president, spoke last month at strategic textile centers to interested cotton textile executives. When and if the program actually goes into operation depends upon their reaction, for it is up to them to finance it through a 2c per bale assessment to be paid to the Cotton-Textile Institute. The plan of financing has been endorsed by the Board of Government of the American Cotton Manufacturers Association and the Executive Committee of the Cotton-Textile Institute.

Six phases to be covered by the program fall under the general heads of Public Relations, Publicity, Merchandising Promotion, Special Events (fashion shows, etc.), Advertising, Miscellaneous. The program will tie up with that of the National Cotton Council, but will be separately financed.

Government aid through the Cotton Consumption Council includes: (1) Cotton stamp plan; (2) Increased Government purchases of cotton; (3) Subsidies for new uses; (4) Development of exports; (5) Research for new uses. The council is considering a "cotton Christmas" and a "cotton Easter."

Appleton Sees Trend Toward Synthetics

The world textile trend is now definitely toward man-made fibers, it was stated recently by William C. Appleton, president of American Viscose Corp. Mr. Appleton added that this development was bound to be further accentuated in the future. Analyzing the first half of 1940 in the rayon industry, he said that period had witnessed a great deal of work done on developing new fabrics and outlets for yarn and staple. He observed that the industry now appeared to be on the threshold of generally increased use of rayon in various fields, including flat knitting, automobile materials, and certain industrial applications.

The pronounced preference for rayon and the other new textiles, Mr. Appleton noted, was indicated even in countries where there are ample supplies of natural fibers. He pointed out that the present inventory position of the rayon industry in this country was good.

Despite the international situation, rayon operations and deliveries continue at capacity for several reasons aside from new outlets. Among these is the greater demand for fine denier yarns requiring proportionately more spindles and the expected effect of an armament program and consequent possible shortage for normal uses of some of the natural fibers.

New Alabama Group

Organization of the Alabama Textile Operating Executives was effected recently at a meeting in Auburn, Ala., attended by representatives from 38 textile plants in the State. The officers elected are: Frank K. Petrea, of Talladega, chairman; John Baum, of Opelika, vice-chairman; and B. H. Crawford, of Auburn, secretary-treasurer. Executive committee members include: H. B. Bergfeld, Talladega; A. H. Randall, Birmingham; J. E. Warren, Sylacauga; F. F. Phillips, Siluria; and Nelson N. Harte, Huntsville. The next meeting will be held in Auburn, Nov. 9.

Scarce as Hen's Teeth

Every year at this time cotton textile executives, whose mills require long staple cotton, eye in a speculative fashion the Delta and its anticipated crop. This year they have good reason to "view with alarm" for the Delta faces the smallest crop since 1923, due to disastrous rains in July. As everyone interested in long staples knows, Delta planting interests for several years have put a goodly portion of their land in short staple seed since the premium on long staples hardly justified the loss in quantity of short staple cotton producing more per acre than long staple. This year approximately 1,000,000

EASTMAN FASHION SHOW MODEL wins television beauty contest at World's Fair. Wearing a green and white striped bathing suit of Eastman acetate rayon, Miss Tennessee Eastman won the Fair-wide beauty contest in the RCA Television Gardens at the New York World's Fair. She is a model in the Eastman fashion show in the Kodak Building.

TEXTILE CALENDAR

American Association of Textile Technologists, annual outing, Sands Point (L. I.) Bath Club, Aug. 23, 1940.

American Chemical Society, 100th meeting, Detroit, Mich., Sept. 9 to 13, 1940.

Southern Hosiery Mfrs. Assn., annual meeting, Grove Park Inn, Asheville, N. C., Sept. 13 and 14, 1940.

Denier Club, outing, Old Oaks Country Club, Purchase, N. Y., Sept. 19, 1940.

National Safety Congress, Stevens Hotel, Chicago, Oct. 7 to 11, 1940.

National Association of Cotton Manufacturers, annual meeting, Providence-Biltmore Hotel, Providence, R. I., Oct. 9 and 10, 1940.

Alumni Association of Philadelphia Textile School, testimonial banquet to Bradley C. Algeo, Penn Athletic Club, Philadelphia, Oct. 11, 1940.

American Association of Textile Chemists and Colorists, 20th annual meeting, Hotel Commodore, New York, Oct. 18 and 19, 1940.

Alabama Textile Operating Executives, Semi-annual meeting, Auburn, Ala., Nov. 9, 1940.

Fourteenth National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, Dec. 2 to 7, 1940.

Southern Textile Exposition, Textile Hall, Greenville, S. C., March 31-April 5, 1941.

acres were planted in the Delta but about half the planting was in short staples, 1 3/32 in. and shorter.

A late spring, a late planting and continuous heavy rains for the solid month beginning June 26 gives an estimated yield at this time of a total of 400,000 bales. Approximately only 200,000 bales of these will be of cotton 1 1/8 in. and longer. At this time there is practically no 1 1/4 and 1 3/32 in. of free cotton. The boys holding these staples are asking and getting 25c per lb. for them. This is due to the demand for longer staples and the complete shut-off of importations of the Egyptian crop.

Just what longest-staple-users will use for the year 1940-41 is a big problem. Obviously, they will have to pay through the nose, for with the greatest potential long staple consumption in many years (due to the National Defense Program) they face (1) a famine, (2) no good grade long staples in the loan; (3) no imports; and (4) a crop disaster in the Delta.

Aids Local Promotion

The National Cotton Council has mailed into 1900 communities of 17 States material for a proposed cooperative advertising campaign. The material, contained in a booklet made up of 13 prepared advertisements, is supposed to do a bang-up public relations job for any organization willing to sponsor the campaign in its locality. The advertisements tie in with the National Cotton Council's cotton consumption program, but will carry local sponsors' names.

S. T. A. Fall Plans

The Southern Textile Association will conduct eight technical meetings this fall, according to plans made by the board of governors at a recent meeting held in Charlotte, N. C. At the meeting Ellis Royal was re-elected secretary and treasurer of the association. Frank D. Lockman, of Lockhart, S. C., is president.

The Mill Village

"Shall We Sell the Mill Village?" is the title of a booklet recently published by the Alabama Cotton Manufacturers Association. This includes newspaper comment on village sales; executives' comment on the same subject; synopsis of data from the North Carolina Cotton Manufacturers Association; and articles reprinted from magazines. Included in the latter are the article entitled "Selling Mill Houses to Employees" from the September, 1939, issue of TEXTILE WORLD, and the two articles by Miss Harriet L. Herring, from the May and June, 1940 issues of TEXTILE WORLD.

New York Hosiery Men Golf on Aug. 27

The fourth annual New York Hosiery Men's Golf Tournament will be held on Tuesday, Aug. 27, at the Knollwood Country Club, near White Plains, N. Y. James D. Maver, Hanes Associated Mills, is general chairman, and Harold Dick, Charles Chipman's Sons Co., vice-chairman. Jack Wolin, I. & J. Wolin, is chairman of the entertainment committee.

Johnson & Johnson Start Brazilian Mill

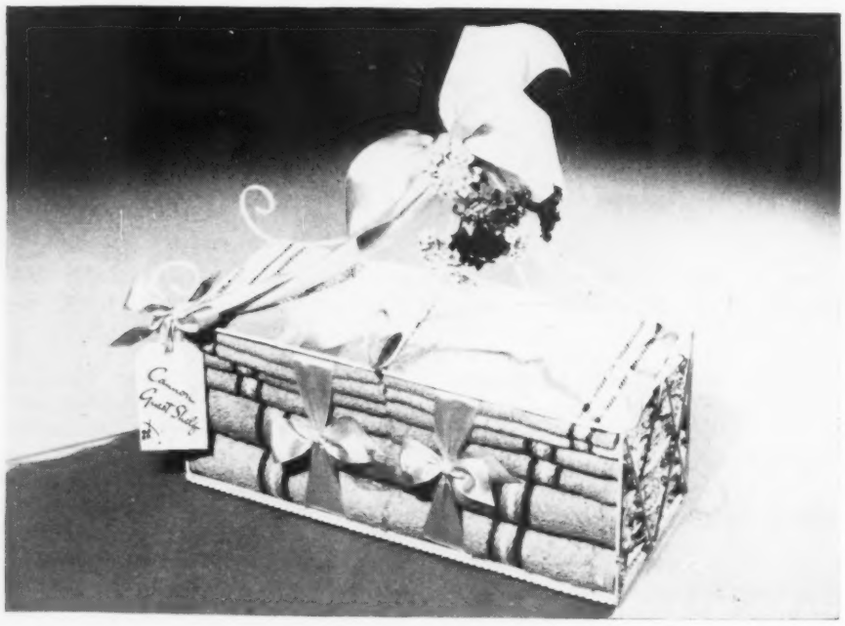
Johnson & Johnson interests have erected a cotton mill at Sao Paulo, Brazil. Harry Purvis, superintendent of the Chicopee Mfg. Co., Gainesville, Ga., left early in July for Brazil in order to assist and instruct the management of the new plant in its operation. It was understood that he will be in Brazil for at least six months or until the mill is operating satisfactorily.

Nylon Marches On

Nylon hosiery has not become plentiful at retail, nor from the present outlook does this seem likely in the near future. Department stores are sold out of the goods shortly after their receipt, and only in certain periods from month to month have they a balanced stock on which to draw. Heads of retail hosiery departments are somewhat upset by the fact that customers are turning away.

Among the catalog houses, Sears and Ward list the 45- and 51-gage at $1.09 and $1.24, while Spiegel, Inc., quotes 98¢ and $1.15.

Lycoming Hosiery Mills is offering



CANNON "Guest Shelf" is a handsome 12-piece towel set, uniquely packed in a decorative white wire hanging guest shelf, designed for home use. "Guest Shelf" retails for about $4.95.

women's silk hosiery with Nylon covered toes for retail at 89¢. A similar article will be offered in half-hose for men, varying in price from 50¢, three for $1 and 75¢ a pair.

Nylon is finding use in women's undergarments and from several sources come lines of brassieres and bandeaus as well as foundation garments, girdles and corsets.

N.A.C.M.'s Annual Meeting

The 150th anniversary of the founding of the Slater Mill, Pawtucket, will be commemorated by National Association of Cotton Manufacturers at its annual meeting at Providence-Biltmore Hotel, Providence, R. I., on Oct. 9 and 10.

District Court Acquits

After a two-week trial by jury in the U. S. District Court, the group of 15 officers and employees of Fitzgerald (Ga.) Cotton Mills, who had been indicted on charges of conspiracy to violate the Federal civil liberties statutes and the Wagner Labor Relations Act, were acquitted on Aug. 1. The alleged violations were in connection with TWU activities at the plant. The bringing of criminal charges for NLRA violations is unusual procedure. At time of going to press it was not indicated whether the Government legal staff would appeal the decision.

Color in the Home

An attractive and helpful booklet prepared by the Celanese Corp. of America presents and illustrates nine original window treatments to express an individual feeling for every room in the house. Titled "Create an Atmosphere with Color in Your Home," the booklet includes plans for: Blue Study, Glorious Living, Harvest Plenty, Sleeping Beauty, Repose, Outside In, Racket Room, Vitamin Plus, and Water Cool.

New Institute Booklet

The Cotton-Textile Institute has issued a new booklet "Spots and Futures" which outlines the aims and activities of the organization, particularly those referring to these subjects: 1. Relations of the Government; 2. Cooperation with individuals and groups; 3. Compilation and dissemination of statistics; 4. Development of group cost service; 5. Maintenance of a field staff to coordinate group activities; 6. Development of favorable public relations; 7. Maintenance of a Trade Name and Pattern Registration Service; 8. Handling 25,000 inquiries a year.

TEXTILE MILL SIDELIGHTS—No. 18

"I'll be ready for the party in just a minute, boss!"

Textile Men to Speak at Chemical Society Meeting

Ten textile men are scheduled to speak at a symposium on new textile developments to be held in connection with the meeting in Detroit on Sept. 9-13, 1940, of the American Chemical Society. Their names, connections, and topics follow: Kenneth H. Barnard, Pacific Mills Print Works, "Recent Progress in Textiles in New England"; Robert Boyer, Ford Motor Co., "Experimental Production of Fibers from Soybean Proteins"; Dr. F. Bonnet, American Viscose Corp., "Vinyon"; Dr. G. P. Hoff, E. I. du Pont de Nemours & Co., "Nylon as a Textile Fiber"; Dr. Games Slayter, Owens-Corning Fiberglas Corp., "Ways Fiberglas is Being Employed"; Dr. D. H. Powers, Rohm & Haas Co., "Synthetic Resins for Textile Fabric Modification"; Dr. Harold DeWitt Smith, A. M. Tenney Associates, "Cellulose Acetate Rayons"; F. C. Atwood, Atlantic Research Associates, "Protein Fibers"; N. E. Oglesby and L. E. Hoogstoel, Behr-Manning Corp., "Electrocoated Pile Fabrics."

Accident Rates in Textile Industry

Textile mills averaged 8.30 for accident frequency and 0.62 for severity in 1939 according to a bulletin released last month by the National Safety Council. Both rates were considerably below corresponding averages of 11.83 and 1.42 for all industries. Frequency was up 13% from 1938, and severity increased 2%.

Adopt Revised Hosiery Standard

A revised commercial standard for hosiery lengths and sizes, effective from Aug. 15, has been announced by the Division of Trade Standards, National Bureau of Standards, Washington, D. C. Designated Commercial Standard CS46-40, it provides standard measurements and methods of measurement for men's, women's, children's, and infants' hosiery.

Apex Offers Government-Styled Hosiery

Apex Hosiery Co., Philadelphia, has introduced four new full-fashioned mercerized lisle styles, each bearing an assigned U. S. Government style number, and all fashioned of 110/2 Durene yarn. Style No. 7 is a 42-gage plain lisle number of fine grained texture. Style No. 75 in 45-gage features a lace clock. Style No. 73, described as "Bridal Veil Mesh," is a fine pin-point pattern. Style No. 74 features a soft-

GRIFFIN, GA., the home of Dundee towels, made by the Georgia-Kincaid Mills, recently celebrated its 100th anniversary. Mrs. Mary Stapleton, pictured here on her throne as Cotton Queen for the event, is an operative in Georgia-Kincaid Mill No. 3. She was crowned by W. D. Anderson, president of the Bibb Mfg. Co., Macon, Ga.

textured medium mesh of lace-like appearance. Both mesh styles are 45 gage. Present prices quoted on these stockings are $5.50, $6.50 and $6.75 per doz.

Cannon Mills Start Hosiery Campaign

This month, in nine consumer magazines, begins a campaign to advertise the hosiery made by Cannon Mills to an audience of about 9,500,000 American women. Brief, news-type, fashion copy with candid camera shots, will tell the story which is focused upon style-conscious younger American women. Backing its campaign, Cannon organization stresses to retail stores "that first it was Cannon towels, next it was Cannon sheets, now it's Cannon hosiery." The lines of Cannon silk hosiery retail for 69¢ to $1.10.

Flag Dedication

The Carolina Process Co., Mount Holly, N. C., held an impressive flag dedication service on July 4. The ceremony was attended by the personnel of the office and the employees of the company. A thought-provoking address was made by R. C. Anderson, president and treasurer, who pointed out that Fourth of July this year had greater significance in the heart of every American than at any time since the Declaration of Independence.

Offers Rayon on Tubes

Atlantic Rayon Corp., Providence, R. I., is offering yarns processed on headless-package twisting equipment. This is said to be the first full installation of the new method in the trade; it makes possible delivery of the finished yarn on tubes instead of spools. Damaged and soiled yarn is reduced, it is stated; package sizes range up to 24 oz.; and the packages lend themselves well to high-speed warping. It is announced the method can be applied to all extra-twisted single synthetic yarns, with the exception of full crepe twist, and to numerous plied yarns.

House of Cotton

A house built entirely of cotton has been constructed at Dovesville, S. C. Method of construction is as follows: The outside walls are made of heavy canvas firmly glued to wall sheeting, then covered with a thick coat of paint and tacked down with copper tacks. The inside walls are also of cotton canvas, but lighter in weight than that used outside. Printed with light figures it resembles wall paper. The four-inch space between the outside and inside walls is filled with a specially prepared cotton insulation.

Australia Looking for Wool Market

It is reported that the markets which have been lost to Australia by the overrunning of European countries since the war began, previously consumed 42% of the exportable wool clip. Outside of the British Empire there are only two important wool buyers left, the United States and Japan. Of course, the United Kingdom has contracted for Australia's entire exportable clip for the period of the war, but it is believed that increased war-time requirements will not compensate for the loss of Australia's continental markets. American purchases in 1938 and 1939 represented less than 3% of Australia's exportable wool clip, but Australians believe that this can be markedly increased. Some sources say that Japan is ready to take all of Australia's exportable clip. The International Wool Secretariat is looking into further promotion of wool goods in the United States, South America, and the Far East with special stress on printed woolens hitherto unobtainable in those markets at reasonable prices.

Hosiery Workers Still Opposed to Third Shift

At the recent annual meeting of the American Federation of Hosiery Workers, Milwaukee, Wis., a referendum of the membership was authorized to empower and authorize the national executive board of the group "to adopt any and all legitimate ways and means which it may deem necessary to protect and preserve the interests of the membership with reference to the three-shift method of operation of hosiery machines." This was at first interpreted loosely as indicating a change in policy on the part of the Federation in favor of three-shift operation, but it has since been learned that this is not the case and that the workers still oppose the third shift in principle. It is understood that the purpose of the resolution was to give the national executive board the flexibility to develop strategy in reference to the third shift development which the board is more interested in checking than in forwarding. The National Association of Hosiery Manufacturers is also opposed to three-shift operation.

Cotton Goods Attracts Interest

During the last week in July there was considerable buyer interest over a broad range of cotton goods, although much of this was in the form of bids somewhat under market levels. Buyers did not find many weak spots, but a sufficient number of them operated at the current basis to make a really good market. Print cloths, and wide as well as narrow sheetings have benefited from the trade. The business was largely for nearby delivery and mills hope for a continuance of this activity through August if production schedules are to be maintained.

Wool Goods Slow Despite Strength

Despite the strength which army orders and the general war situation induces, business was reported slow in woolens and worsteds at the close of July. Buyers were merely filling-in and operating on a hand-to-mouth basis, but the statistical position of the industry was exceptionally good. Manufacturers will probably be slow in introducing their tropical worsteds and gabardines for the summer 1941 season. Civilian business for fall has not come up to expectations, but it is generally believed that spot buying in September and October will be large.

Wool and rayon blends are looking up for the summer 1941 season and may become the most important item in the market if there is any real scarcity of wool by that time or any sharp price upswing. Women's wear markets are reported to be improving and there is continued interest in fleeces, shetlands and camel's hair types for women's coats. Wool tops on the New York Exchange declined about 5c. a pound from $1.01 for spots on June 28 to 96c. on July 19 and rose to 98c on Aug. 2. Average price of ten types of wool in the Boston market declined about 2c.

Rayon Holds Steady

Rayon yarn was steadily supported during July. Inferences that yarn prices might be higher were somewhat counterbalanced by the depressing war developments. Stocks in the hands of primary manufacturers are said to be low, and prospects for the next few months are not believed to be susceptible to much change no matter what the European news may offer.

Mill activity during July ranged from 85 to 88% of capacity, except for the holiday week with which the month started and which was down to 51% because of the week-end shutdowns involving the Fourth. Fall business is slow in developing, but despite lack of snap to the market there is a feeling that prices are not likely to go lower. In the fabric field taffetas remain important and spun rayon novelties are holding their own. Rayon fabrics featured at the industry's exhibit at the World's Fair stressed the following: Rayon jerseys, dark-toned rayon crepes, printed crepe pajamas, printed crepe evening gowns, rayon sharkskin, shantung weave rayon and rayon sheers.

Raw Silk Unusually Steady

The month of July witnessed only minor fluctuations in raw silk. The month closed with Double Extra Crack 78% in New York at about $2.55 and with the Yokohama price 1350 yen for grade D. This price is the same as the figure at which the Japanese Government agreed to purchase raw silk on July 5. It remains to be seen whether this effort at stabilization will prove effective in preventing a decline below the basis already reached. Japanese figures on the total spring cocoon crop indicate an out-turn 4.3% less than

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that of a year ago for a group of identical districts. Taking all districts reporting, the figure on decrease is 10.7%.

Hope for Silk Hosiery Sales

Manufacturers are hopeful that buying of full-fashioned silk hosiery will take a definite upturn within a few weeks. However, the cut-price competition which developed on unbranded low-end goods has not helped the market. Most of the large producers indicated there would be no change on their branded lines until Aug. 30, but with unbranded lines selling down to 39c. a pair in retail circles, the situation is far from stable. The raw silk market remained relatively steady through July, with Double Extra Cracks 78% in the neighborhood of $2.55 to $2.60. Buyers seem ready to pick up bargains, but manufacturers are hopeful that by the time September comes around business will move on a larger and more confident scale.

Underwear Mills Expect Good Season

The underwear business continues on an even keel with fair advance orders and general confidence that the last half of 1940 will be satisfactory. Not only are army orders likely to keep mills busy, but a number of the consumer novelties which the mills have devised are proving good sellers. Such important manufacturers as P. H. Hanes Knitting Co. and Fuld & Hatch Knitting Co., are featuring knitted sleeping suits for children, and it is believed the market is right for increased volume of this type garment. In several instances spun rayon and cotton are mixed in the yarn for the sleeping suit material which has a napped and attractive surface.

Outerwear Looks Toward Winter Sports

Knitted outerwear manufacturers are reviving memories of last year's winter sports in connection with their new lines of sweaters for spectator sportswear and for active ski wear. Jantzen Knitting Mills is featuring a new stitch called "the Scandinavian stitch" which closely resembles hand knitting. Broad-shouldered effects are usual. It is likely that the ski wear style will set the pace for general cold weather out-of-door wear during the coming season.

This and That

American Bemberg Corp. is starting a cooperative promotion campaign on two of its lingerie satins, one made of Bemberg rayon and silk, and the other made of all-Bemberg rayon. The company has found that its program for serviceability specifications on the Bemberg triple sheer has been very successful and has enlisted full cooperation by retailers. The triple sheer may not carry the specification unless the thread count of the finished fabric is at least 114 ends and 75 picks per inch.

American Viscose Corp. installed an interesting display of rayon at the Waldorf-Astoria Hotel, New York, for the annual convention of the Boys' Apparel Buyers Association held there July 9 to 11.

Another raw silk enthusiast is Mrs. Frank J. Lewis of Chicago, who plans to set up 5,000 mulberry trees in Palm Beach County, Fla. and to raise silk worms and reel silk from the resulting cocoons.

Apparel wool stocks in the United States as of June 29, 1940, are reported as 126,280,000 lb. scoured basis, against 123,000,096, lb. one year previous, and 98,860,000 lb. on March 30, 1940. Carpet wool stocks on June 29, 1940,

amounted to 46,248,000 lb., against 32,666,000 lb. a year previous.

Textile Color Card Association of the United States will soon issue a special collection of Palm Beach and California colors for southern resort and cruise wear for 1940-41.

Dyers and Printers Employers Association and the Federation of Dyers, Finishers, Printers and Bleachers of America, are in negotiation at Paterson, N. J., to establish a new contract which will go into effect on Sept. 1, and to meet general approval before the present agreement expires. The matter of work load is said to be the most controversial subject involved with the new contract.

Hoover Hosiery Co., Concord, N. C., has recently registered the following trade marks: Filmed Crepe, Filmed Finish, Filmed Silk and Business Sheer. The first three have reference to the finishing process applied to the Townwear line, and the last to a four-thread crepe featuring extra reinforcement at vital points of wear.

International Silk Guild is offering interesting promotional material on men's silk neckwear for store and department managers. The booklet covers market information and plans for tie-in with seventh annual Silk Parade which will be held during the week of Sept. 23.

Nashua (N. H.) Mfg. Co. has set up an exhibit in the additional building recently taken by State of New Hampshire at New York World's Fair.

Pacific Mills have announced the application of "Pacific Factag" to its varied lines of printed cotton shirtings for men's and boys' wear.

Shipments of all types of hosiery for first six months of 1940 fell short of first half of last year by 3.9%, a drop from 65,648,910 doz. pr. to 63,110,134. National Association of Hosiery Manufacturers lists Nylon hosiery production for first six months at 586,737 doz. pr. Total women's full-fashioned shipments were 19,469,717 doz. pr., compared to 20,414,086 doz. pr. in 1939.

A broad study, under auspices of the Federal government, into the economic effects on producers, distributors and consumers, of the increasing use of substitute synthetic fibers for wool, was recommended to wool growers by F. Eugene Ackerman, merchandising counsel, New York, in an address before Wyoming Wool Growers Association at their annual convention Aug. 3.

Shipments of rayon filament yarn in July to domestic consumers aggregated 32,700,000 lb., the largest for any month thus far in 1940, states the *Rayon Organon*. Rayon yarn production for second quarter was set at 97,500,000 lb.

Annual summer outing and golf tournaments of the South Central Section of the American Association of Textile Chemists and Colorists was held in the new Lookout Mountain Hotel, Chattanooga, Tenn., on Aug. 2 and 3. Jack Anderson of Peerless Woolen Mills was chairman of the outing.

National Tape & Webbing Distributors, Inc., Philadelphia, has been formed with Eugene J. Ronan as president to distribute the products of a number of narrow fabric mills.

Harris Hardy, of Columbia, Miss., mixes cotton with concrete to make a roofing material. He says the cotton gives the concrete greater durability and flexibility.

Camden, S. C., will celebrate its 1940 cotton festival on Oct. 11. This is school children's day at the Kershaw County Fair and the festival will take the form of a children's Mardi Gras.

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Hints on Dyeing Rayon

Newer Methods and Precautions Needed in Handling Fibers, Warps, and Fabrics

DYEING RAYON in form of loose fibers, warps, and piece goods was discussed by Dr. Earnest Meili, technical advisor, Sandoz Chemical Works, Inc., at a recent meeting of the American Association of Textile Technologists. Following is an abstract of those parts of Dr. Meili's paper dealing with newer methods and with precautions to be taken to avoid some of the difficulties commonly encountered by dyers.

Viscose rayon staple fiber is dyed in loose form, principally when used for admixture with wool, and the dyes are selected according to the fastness requirements of the finished material. Rayon staple can be dyed in the same machines that are in common use for dyeing loose cotton and wool. The following precautions, however, must be observed: (1) The machine should be packed rather loosely, as rayon swells considerably when wet. (2) The staple must not be wet out; the dye liquor must be introduced directly into the dry material. (3) Circulation of the dyebath should be in one way only—from the inside to the outside. (4) The pressure of the pump should be low. (5) To prevent caking together of the fibers after dyeing, the dyebath is run off and the rinsing water is introduced at the same time.

A recently developed, inexpensive method for dyeing viscose and cuprammonium warp yarns is the combination of the dyeing and sizing processes. The operation can be carried out in a regular slasher. The necessary amount of good padding dyes is added to the regular sizing solution, and the warp is run through the hot solution by means of a depression roll, then through the squeeze rolls and over the dry cans. This process not only eliminates the skeining and winding operations, but also improves the weaving qualities of the warps.

Viscose or acetate piece goods received by the dyer should always be carefully examined before they are processed, not only as to fiber content, but also as to construction, and a reference sample should be filed. One difficulty that frequently shows up in the boiling-off process, but which cannot be blamed on the dyer, is pieces with the edges rolled. This is due to tight selvages, which in turn are caused by faulty construction of the goods. The defect can sometimes be ameliorated by pre-steaming and framing, but very often redyeing is necessary, which not only means a loss to the dyer, but the rehandling of the cloth naturally has some lowering effect on its quality.

After boiling off, the goods are dyed with dyes that are selected according to fastness requirements. Lining fabrics, for instance, are always dyed fast to perspiration. Light-shade linings are often dyed by the padding method; dark shades are dyed on the jig or, best, by the combined padder-jig method. In this latter process the goods are padded near to shade and are then given a few ends on the jig, where they can be shaded. The advantages of padder-jig processes are saving of time, reduction of bar marks and warp streaks, elimination of listing or dark selvages, better penetration, and better uniformity in shade of the two fibers in cotton and rayon fabrics.

Gas fading of acetate dyes, also known as store fading and acid fading, has been a puzzling phenomenon for approximately eight years. Finally Rowe and Chamberlain

How's the Work Running?

AVISCO will help it run smoother, because its additional strength provides an additional factor of safety.

As you know, the spun strength of standard rayon staple diminishes rapidly with increased twist beyond normal, and there is increased demand for yarns spun beyond normal twist today. Use of AVISCO solves this problem and gives you added advantages.

AVISCO is measurably stronger than standard rayon staple. It makes yarns as much as 30% stronger dry . . . as much as 36% stronger wet, depending upon count, denier and staple.

Because it shows much less loss of strength when wet than standard rayon staple, this added wet strength can make the difference between a launderable fabric and one that must be dry cleaned or washed by hand. It also contributes added factors of safety for dyer and finisher. And, it results in greater eventual consumer satisfaction with the finished product.

AVISCO was developed originally for cotton process spinning and is now available for worsted and silk spinning as well. It comes chiefly in 1.25, 1.50 and 3 denier—in lengths from 1 9/16" to 5". It is made only by American Viscose Corporation. You'll want to get the full facts. Because with AVISCO the work runs better.

HOW MUCH STRONGER THAN STANDARD FIBER IS AVISCO?

Since this question cannot be answered with one figure, the following table is offered as indication of what might be expected in normal cotton mill practice.

1.5 denier AVISCO averages 10 to 12% stronger than 1.5 denier standard fiber, but the yarn strengths compare as follows:

	DRY	WET
1.5 denier 1 7/16" strong compared to *1.5 denier 1 7/16" standard:*		
30s	17% stronger	21% stronger
40s	13.5	16.
60s	8.	17.
1.25 denier 1 7/8" strong compared to *1.5 denier 1 7/16" strong:*		
30s	11% stronger	12.5% stronger
40s	14.5	16.
60s	13.5	14.5
1.25 denier 1 7/8" strong compared to *1.5 denier 1 7/16" standard:*		
30s	30% stronger	36% stronger
40s	30.	35.
60s	22.5	34.

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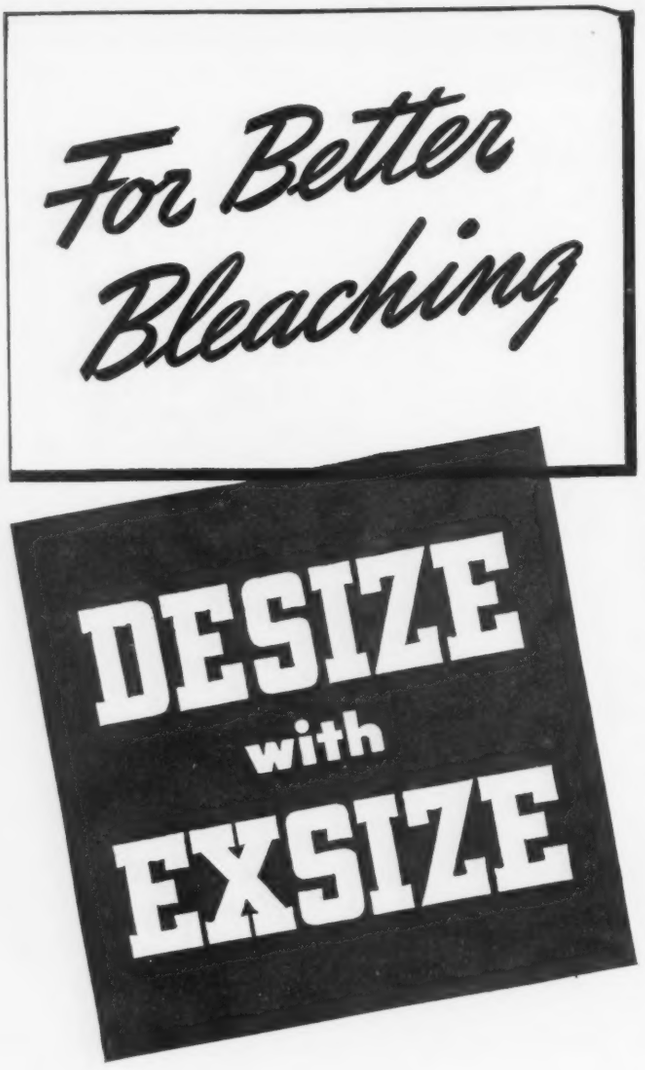

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proved that nitric oxide was the cause of the fading and located the source of the gas in burnt gas fumes. When combustion takes place, some nitrogen of the air combines with oxygen to form nitric oxide, and though the amount is small, it is sufficient to cause fading of the dyes. So far we have no complete and satisfactory solution of this problem. There are, however, several ways to minimize its effects.

As different acetate dyes show different degrees of sensitiveness, the dyer can slect the dyes of greatest fastness. In addition to this, there are several inhibitors on the market that double to triple the fastness of the dyes. By proper selection of dyes and by using an anti-fume finish, the dyeings can be made satisfactorily fast for normal conditions. The colors, however, are only relatively fast. All rooms in which dyed acetate goods are stored should be kept free from combustion gases. The final solution of the problem probably lies in the creation of a new group of acetate dyes.

"Silk Parade" Week of Sept. 23

Promotion has cooperation of 10,000 retailers from coast to coast

THE SEVENTH ANNUAL Silk Parade which is celebrated this year during the week beginning Sept. 23, will find more than 10,000 retail stores and specialty shops from coast to coast featuring silk on their counters and racks, in their displays, advertising and publicity. Merchandisers, who in the beginning featured silk only in the piece goods department, are now planning to highlight as many as 60 different silk items in as high as 25 departments, building prestige and profits not only for the individual departments but for the entire store.

Never before in the history of this promotion has the American woman been so dependent on the resources of her own country for her fashions and fabrics. Customers who in the past would buy only imported style merchandise are now the logical consumers of quality American-made products.

Many stores are planning to stress American-designed and American-made merchandise in their fall promotions. The silk industry is truly an American industry as it represents an investment of more than $500,000,000 in American capital, employs 250,000 American workers and gives indirect employment to 250,000 more. In one year it converts $90,000,000 worth of raw silk into finished goods with a retail sales value in the American market of approximately $580,000,000.

In times of war and uncertainty, consumers feel that they can not afford the mistake of purchasing flash fabrics, but must buy merchandise that will give them the maximum units of wear for their money. This trend is said to be reflected in an increased demand for pure silk as its strength, live elasticity, and outstanding beauty offer true economy.

The International Silk Guild offers a group of merchandise aids to stores that are planning to "cash in" by tieing in with the Silk Parade. These aids include a dramatic Silk Parade poster in autumn colors, serving as a focal point both for interior and window displays as well as to illustrate advertisements, suggested newspaper layouts, the latest selling and fashion information, merchandise news for the fall and winter season, mats and reprints of tie-ups with national magazines. Consumer periodicals, national newspaper and magazine publicity, radio, moving picture and television programs are also timed for release during the week of the Silk Parade.

AN ENTIRELY NEW MACHINE . . .

FOR ECONOMICAL PRODUCTION OF HIGH-SPEED LOCK-STITCHING

THE NEW SINGER 400W1, with the exclusive Double Rotary Thread Take-Up, was especially designed for continuous high-speed lock-stitching in light and medium-weight fabrics.

It was skillfully engineered for higher speed, easier operation, freedom from breakdowns, least possible vibration, thread economy, longer life, and firm accurate stitching.

FIVE FEATURES OF THE SINGER 400W1

THE DOUBLE ROTARY THREAD TAKE-UP satisfactorily handles the most delicate thread at high speeds.

ANTI-FRICTION BEARINGS—five ball and five roller bearings mean quicker acceleration, increased production and economy in power.

SINGER ROTARY HOOK is a patented and demonstrated success on high-speed production.

AUTOMATIC HOOK LUBRICATION is provided by a positive oil feed from a central reservoir which also lubricates most of the bearings and moving parts under the bed of the machine.

LUBRICATING FELTS keep needle bar and connecting stud well lubricated at highest speed.

SINGER

SEWING MACHINE COMPANY

MANUFACTURING TRADE DEPARTMENT

149 BROADWAY, NEW YORK, N. Y.

Branches in all principal cities

SINGER SEWING MACHINE CO.
Room 717A3
149 Broadway, New York, N. Y.

Please send complete information about the New Singer 400W1 to:

name_____

street_____

city_____ state_____

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It's pure enough for HER but not for her CLOTHES

While those impurities—iron, mangenese, calcium, etc.—that hide in even crystal-clear water won't ruin her bath they *can* cause a lot of grief in your dyeing and finishing operations . . . Many important textile plants have called on us to analyze their water supply to determine whether or not they really need a

HUNGERFORD & TERRY, INC.
WATER PURIFICATION SYSTEM

If not, we say so. But when dull colors, off-whites, poor dye matching and spoilage are due to an impure water supply we have no hesitancy in explaining how our equipment will correct these evils and how little it will cost to install and operate . . . Write us today.

HUNGERFORD & TERRY, INC.

WATER PURIFICATION PLANTS DESIGNED
INSTALLED *and* GUARANTEED

CLAYTON, NEW JERSEY

Predetermining Costs

Cotton Textile Institute Manual Outlines System for Narrow Sheetings

THE LATEST STEP taken by the Cotton Textile Institute to encourage cotton mills to install accurate systems for predetermining costs of different fabrics is the publication recently of a manual, "A Cost Outline for Narrow Sheeting Mills." The manual gives the essentials of a simple method of predetermining costs of different fabrics, and demonstrates, with concrete figures, a step-by-step development of normal production costs through each of the several mill processes from raw cotton to the woven fabric. The methods employed have been selected for the primary purpose of providing dependable data on which to base sales quotations. In addition, the basic data, especially the labor and overhead budgets, when amplified and supported by adequate payroll analyses, production records, etc., may be utilized in the establishment of standards for gaging operating efficiency and checking current cost variations at each of the several manufacturing processes.

The manual shows the development of predetermined normal costs in a typical narrow sheetings mill with 30,552 spinning spindles, 900 automatic looms, and the necessary complementary equipment. The mill is assumed to be operating 80 hr. per week on a two-shift basis for labor, purchasing its power, and producing standard narrow sheeting from 15s and 20s warp yarns and 14s, 16s, 18s and 19.5s filling.

Detailed directions for determining manufacturing costs of roving, yarn, and fabrics, are followed by a discussion of the calculation of waste percentages, cotton cost, return on investment, loss on irregular goods, selling expense, and reconciliation of cost estimates.

Regarding return on investment it is stated that any sound development of cost estimates to be used as a basis for sales quotations should include a margin for profit equivalent to a fair return on the capital investment. The safest way to insure proper attention to this item is to incorporate it as a part of the general overhead budget, for distribution to the various cost departments on equitable bases. Unfortunately, this method does not prevail in the cotton textile industry, and in deference to established procedure return on investment is treated as an added cost applied to the product on a loom production basis. This may not accurately reflect the amount of investment in the yarn processing equipment, but for the type of mill herein depicted, the results are considered sufficiently accurate for all practical purposes.

It is recommended that a reconciliation of manufacturing cost estimates be made as often as process inventory is taken, or for each accounting period. The result is useful for determining the basic trend of the mill's operating efficiency and serves to indicate when the cost estimates need revision.

Although intended primarily for distribution among the mills of the narrow sheetings group, a limited number of copies of the manual are available for general distribution, and can be obtained directly from the Cotton-Textile Institute, 320 Broadway, New York, at $1 per copy. Further to stimulate mills that have faulty cost systems to improve them, the Institute will welcome inquiries as to the application and adaptation to special circumstances of the methods outlined and will be glad to lend its assistance to any mill desiring advice on a specific cost problem.

Not at all uncommon with the new *"Continuous Process"* Spun-lo Rayon

You remember Mark Twain's famous remark: "Everybody talks about the weather but nobody *does* anything about it." So in Rayon, everybody talked about a superior, knot-free yarn and Industrial *did* something about it—by developing the revolutionary "continuous process" which produces a virtually knot-free yarn. Every practical weaver knows that each knot creates a new danger.

And there is an additional hidden value inside the cone — the extraordinary uniformity of the yarn which makes for genuine level dyeing.

*Spun-lo Rayon

*Reg. U. S. Pat. Off.

INDUSTRIAL RAYON CORPORATION · CLEVELAND, OHIO

NEW YORK OFFICE • 500 FIFTH AVENUE

WETTING-OUT
SANFORIZING
SOFTENING

with

SURFAX W.O.

FAST and ECONOMICAL

You may be one of the many now using this superior surface-active agent—and benefiting by its outstanding performance and economy. But if you are not, here's what it will do for you.

As a wetting-out agent SURFAX W.O. is extremely speedy; on a money-value basis, it will excell any other product of its type. It is being successfully used on all fibers. It will save you time . . . cost you less.

Customers tell us that it is the fastest and most suitable product available for sanforizing, and that it is unequalled in wetting-back ability. As a softener, SURFAX W.O. also imparts exceptionally high absorbency. Strong claims, these . . . but you can prove them yourself by Draves Test or in actual production. Write for trial quantity for test.

E. F. HOUGHTON & CO.

Third & Somerset Streets, Phila., Pa.

Southern Division Office and Warehouse
1301-5 W. Morehead Street, Charlotte, N. C.

NEWS ABOUT MEN

J. C. McMurray has been elected president of Springfield (Tenn.) Woolen Mills, succeeding **John E. Garner.**

Mrs. A. R. Hoover, Sr., has been elected president of the Hoover Hosiery Mills, Concord, N. C., succeeding the late W. W. Flowe. **W. W. Flowe, Jr.,** secretary and treasurer of the company, has been elected a member of the board.

J. W. Houth has been elected vice-president and general manager of Clearwater (S.C.) Mfg. Co.

Thomas J. Fawcette is the new vice-president of Statesville (N.C.) plant of Paola Mills, Inc.

S. E. Anderson is the new treasurer of Iva (S.C.) plant of Jackson Mills. **E. M. Anderson** was named secretary and assistant treasurer.

F. W. Hancock has been appointed sales manager of Aberfoyle Mfg. Co., Philadelphia, succeeding **Edwin L. Dale,** recently resigned. Mr. Hancock is a graduate of the Philadelphia Textile School and has been associated with Aberfoyle for many years. **W. T. Galey,** grandson of the founder of the company, who until recently was connected with its Chicago office, will be Mr. Hancock's assistant. Mr. Dale joined Aberfoyle in 1919 and was in charge of yarn sales since 1925.

J. W. Manley, president of Sayles Finishing Plants, Inc., Saylesville, R. I., has resigned that position and been elected chairman of the board. He joined the Sayles organization in 1906. **H. P. Reno** has resigned as vice-president and **John Hutton,** now head of the Phillipsdale plant, has been elected a vice-president, as has also **G. E. Sinkinson,** now head of the Saylesville plant.

J. W. MANLEY

John E. Bassill, president of Tubize Chatillon Corp., who has completed 20 years with his company.

John E. Bassill, president of Tubize Chatillon Corp., New York, has completed 20 years association with the company. He joined the accounting department of the firm when its headquarters were in Philadelphia, became assistant treasurer in 1922, vice-president in 1929, vice-president and general manager in 1931 and president in 1932.

Tyre Taylor of Washington, D. C., who acted as counsel for the American Cotton Manufacturers Association in the textile wage-hour hearings last year, has been appointed vice-president of the Southern States Industrial Council, Nashville, Tenn.

F. G. Bemis of Boston, Mass., has been elected president of Bemis Bag Co., Bemis, Tenn., and Bemiston, Ala., succeeding **G. N. Roberts.**

Earle Stall, president of the F. W. Poe Mfg. Co., Greenville, S. C., has been named president of the Furman University Alumni Association.

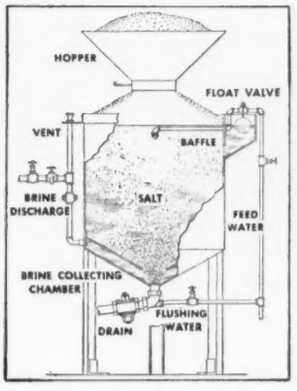
R. C. Moyer is the newly elected manager of Linen Thread Co., Blue Mountain, Ala.

F. O. Tyler has been elected president and treasurer of Anniston (Ala.) Mfg. Co.

J. E. Sirrine, head of J. E. Sirrine & Co., textile engineering firm of Greenville, S. C., has been re-elected president of the Greenville Country Club.

William P. Jacobs, executive vice-president of the Cotton Manufacturers' Association of South Carolina, was recently named by Governor Maybank to be South Carolina's representative on a southwide national defense committee.

Why crystal clear brine of "*pure food*" quality can make 4 important savings in your mill



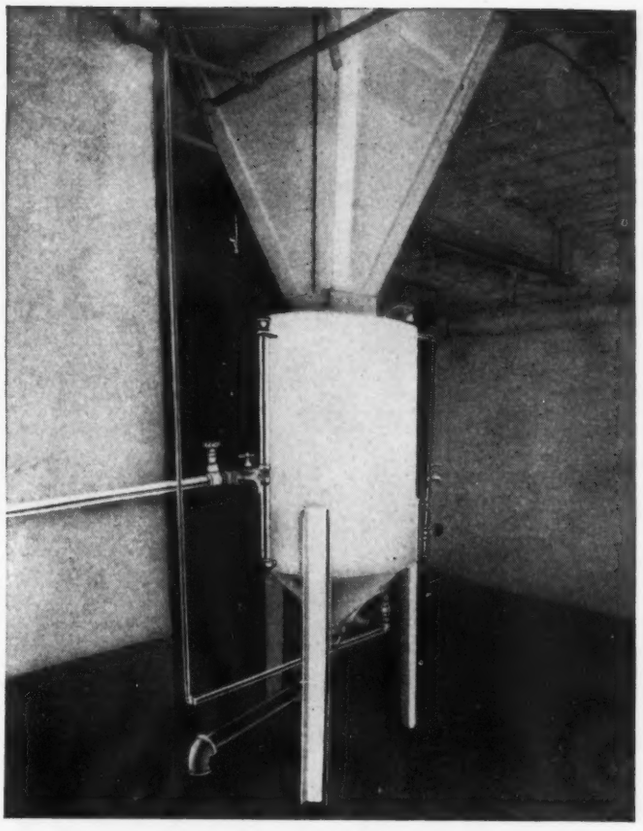
LIXATE BRINE is crystal clear, uniform because it is always fully saturated, and chemically pure far beyond the requirements of food packing authorities. Yet it costs far less to produce this superior brine than to produce cloudy brine of uncertain strength by any process requiring agitation.

The cross section diagram reproduced here shows why this is true. The recommended grade of International's Retsof, Detroit or Avery Rock Salt is placed in a hopper. It flows by gravity to the Lixator below. Water enters through a spray nozzle at the top, dissolves the salt without agitation, and becomes fully saturated brine. This brine is self-filtered. It rises, crystal clear, in a collecting chamber to a discharge pipe, and flows to a storage tank.

Operation is wholly automatic, requiring no attention except to keep the hopper supplied with salt. This automatic operation makes these four major savings:

1. Reduced labor cost for handling salt.
2. Elimination of labor or power costs for mixing brine.
3. Reduction in labor cost for distributing brine throughout the plant.
4. Savings estimated by users to be as much as 10% to 20% in amount of salt required.

Lixate Brine is clear because it is produced without agitation and is self-filtered. Since it is always fully saturated, it is always uniform. It is made from International's brands of Rock Salt, economical, bacteriologically clean, and easy to store and handle. Write for The Lixate Book, which explains in detail the advantages of The Lixate Process for Making Brine.



OSWEGO SHADE CLOTH CO., Oswego, N. Y.

The Lixate installation illustrated above is in a mill where a highly specialized textile production now profits from Lixate economies and contributions to operating efficiency. Lixate Brine is now being used as the dye exhausting agent in wet processing cotton and wool, silk and rayon, unions and all types of mixed fabrics. In addition to its operating savings, The Lixate Process can also make savings in material costs for many mills using a saline exhausting agent that costs more than International's Retsof, Detroit, or Avery brands of Rock Salt.

★ ★ ★

• SALT FOR EVERY PURPOSE

The Lixate Process for Making Brine is a development of International Salt Company, Incorporated, producers of all types and grades of salt. International's three great mines produce Rock Salt of every grade. Its three modern refineries produce every type and grade of granulated salt (vacuum evaporated) and flake salt (grainer evaporated). The advice and counsel of The Research Department of International Salt Company, Incorporated, are freely offered to users of salt or salt brine.

• WRITE FOR THIS BOOK

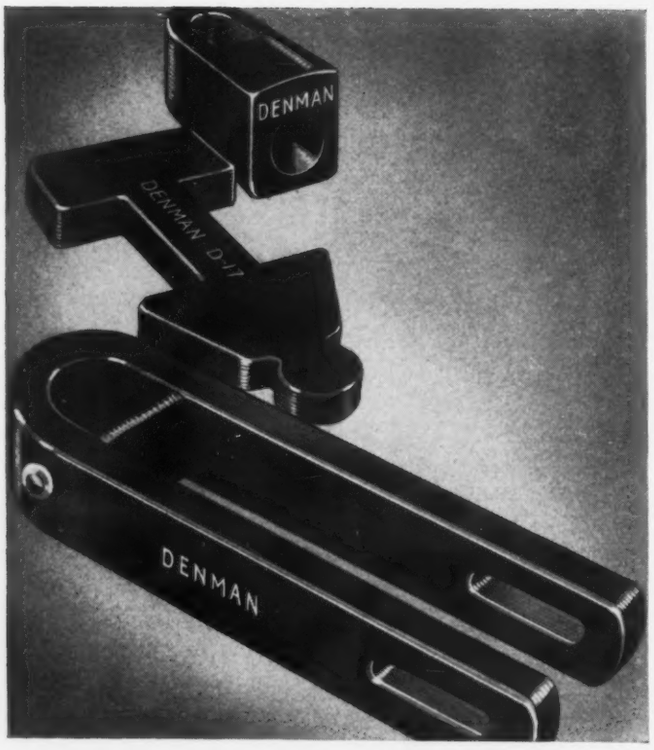
A copy of The Lixate Book will be mailed on request. It contains detailed information about The Lixate Process, with pictures of many installations. It may be of help to you in improving your operating efficiency and lowering costs. Write for a copy.

The LIXATE *Process*
REG. U. S. PAT. OFF.
for making brine

INTERNATIONAL SALT COMPANY, Inc., SCRANTON, PA.

SALES OFFICES: *New York, N. Y. • Buffalo, N. Y. • Philadelphia, Pa. • Boston, Mass. • Baltimore, Md. • Pittsburgh, Pa. • Newark, N. J. • Richmond, Va. New Orleans, La. • Cincinnati, O. • St. Louis, Mo.*

REFINERIES: *Watkins Glen, N. Y. • Ludlowville, N. Y. • Avery Island, La.* • MINES: *Retsof, N. Y. • Detroit, Mich. • Avery Island, La.*



TESTED, PROVEN *and Accepted*

Denman Loom Parts are built to take the terrific punishment of today's high-speed looms.

Their outstanding performance and proven economy, over a period of years, has justified their widespread acceptance as standard equipment in leading mills.

They are your assurance of LOWEST COST per LOOM per YEAR.

DENMAN

PICKERS, LUG STRAPS, HOLD-UPS, ETC.

Exclusive Sales Agents

The Terrell Machine Co., *Inc.*

CHARLOTTE, N. C.

Luther Pilling, Danielson, Conn.....N. E. & Canada
E. W. S. Jasper, Inc., Elizabeth, N. J.:.Penn. & N. J.
Geo. Thomas & Co., Ltd.....Manchester, England

NEWS ABOUT MEN

James C. Self, president and treasurer of Mathews Cotton Mills and other mills at Greenwood, S. C., has built a tower between the Callie Self Memorial Church, which he constructed as a memorial to his mother, and the parsonage, in which the carillon he purchased some time ago, will be installed.

Ernest L. Olrich, president of Munsingwear, Inc., Minneapolis, Minn., has been appointed State Commissioner of Industrial Preparation for Defense by Governor Harold Stassen of Minnesota.

Samuel Lewis Hutcheson, vice-president of Peerless Woolen Mills, Rossville, Ga., has been elected to the New York Wool Top Exchange.

Robert H. Lawson, Pawtucket, R. I., will take over the duties of his father, the late John Lawson, as president of Lawson Products, Inc.

E. H. Bucheit has been elected treasurer, and **Columbus Moise,** secretary, of the Saratoga-Victory Mills, Albertville, and Guntersville, Ala.

E. H. Younts has been elected secretary and treasurer of Scottdale (Ga.) Mills, succeeding **Robert B. Scott.**

Julian T. Baker has been elected treasurer of Virginia Mills, Swepsonville, N. C.

F. W. Brunkin has been elected secretary and treasurer of Dallas (Tex.) Cotton Mills, succeeding **J. N. Townsend.**

A. A. Hobbs has been elected manager and treasurer of Anniston (Ala.) Yarn Mills.

S. F. Dribben has been elected vice-president of Proximity Mfg. Co., Greensboro, N. C., succeeding **Julius W. Cone.**

Mrs. Ina S. Royall has been elected president of Smitherman Cotton Mills, Troy, N. C., succeeding **Mrs. Minnie S. Ewing.**

E. A. Byrum, president and treasurer of Karolen Knitting Mills, Inc., Shelby, N. C., has sold his interest in the industry and has become associated with the Carolina Realty Co., Charlotte, N. C.

Joe A. Porter, Jr., Rockingham, N. C., has joined the faculty of N. C. State College Textile School and will be instructor in weaving and designing. Mr. Porter graduated from State College in 1934 and comes to its faculty from the Danville Textile School. He succeeds **George Peeler** who resigned to become superintendent of the Kings Mountain (N. C.) Mill.

R. D. Hall

R. D. Hall, of the Stowe Thread Co., Belmont, N. C., and former president of the Southern Combed Yarn Spinners Association, was recently elected Commander of the American Legion in North Carolina.

Harvey W. Moore, Charlotte, N. C., secretary-treasurer of Brown Mfg. Co., Concord, N. C., has been placed in charge of White-Parks Mill and Roberta Mfg. Co., Concord, N. C. He will retain his present position with Brown Mfg. Co.

Harry Uberti is general manager of the newly incorporated Keen Dyeing Corp., Paterson, N. J., which is a reorganization of the former General Piece Dye Works.

George K. Swain, lately of Reynolds-Swain, Inc., New York, has started a new sales agency under the style G. K. Swain & Co., which will represent a group of mills making bedspreads, sheets and pillow cases.

L. N. Woolworth, recently with Meridian Hosiery Mills, has become superintendent of the Hattiesburg (Miss.) Hosiery Co., succeeding **H. J. Straussberger,** who it is understood has accepted a position in the North.

Charles Veronelli, formerly secretary-treasurer of the La Francaise Silk Dyeing & Finishing Co., Paterson, N. J., has joined Empire Dyeing & Finishing Co., Paterson, as technical adviser and outside contact man.

Miss Kay Daniels, who has done editorial work in the fashion field for a number of years, has joined the Public Relations Department of Celanese Corp. of America, New York.

G. P. Victorson has organized the Philadelphia Hosiery Mills, New York, which firm will represent a number of manufacturers in the New York selling market.

Cut-Down on Returns and Rejects

..the costly R's of production

ELECTRO-MATIC AIR CLEANER combines electric precipitation as an integral part of an automatic air filter, for highest cleaning efficiency with smoke and fine soot particles. This is the only electrostatic filter on the market that is self-cleaning and can be operated continuously over long periods without interruptions or shut downs for maintenance.

TYPE P L FILTER for smaller installations. Dry type, easily maintenanced, and approved by the Underwriters Laboratories. Eliminates practically all dust and some smoke from the air.

AMERICAN *Air Filters* PROTECT

ALL operations affected by Smoke, Soot and Dust!

MULTI-PANEL AUTOMATIC AIR FILTER for industrial air cleaning where large volumes of air are to be conditioned and normal cleaning efficiency is adequate. Self-cleaning feature places operation on purely mechanical basis, and minimizes maintenance. Available in any size or capacity.

Streaking and discoloration caused by dust, soot, and smoke is being eliminated in many plants through the use of American Air Filters. In many cases, the elimination of losses formerly sustained because of returns and rejects, have alone justified the filter installations—but even more important is the consistent uniformity of production made possible by filtered air. Write for the address of the nearest AAF engineer—his experience is available to you without obligation.

AMERICAN AIR FILTER CO., INC.

725 Central Avenue Incorporated **Louisville, Ky.**

AIR FILTRATION AAF DUST CONTROL

HIT OR MISS METHODS...

Hit or miss methods of selecting soda ash, caustic soda, and other alkalies you require for textile operations have gone out of date.

Today, there are five important requirements to be considered when you place your order for an alkali . . .

QUALITY—Solvay Alkali quality is assured. The oldest and largest alkali producer . . . Solvay Alkalies have established the quality standards for alkalies for years.

FORM OF PRODUCT—Many Solvay Alkalies are produced in various forms to meet your specific requirements.

UNIFORMITY—No hit or miss methods here—Solvay Alkalies are always as specified!

DISTRIBUTION—Three huge Solvay Plants in important industrial centers and many stock points assure efficient and on time deliveries.

SERVICE—Do you have problems in alkalies? Solvay Technical and Engineering Service Division is maintained to help you.

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by The Solvay Process Company

40 RECTOR STREET NEW YORK, N. Y.

BRANCH SALES OFFICES:
Boston • Charlotte • Chicago • Cincinnati
Cleveland • Detroit • New Orleans
New York • Philadelphia • Pittsburgh
St. Louis • Syracuse

SOLVAY SALES CORPORATION
40 Rector Street, New York, N. Y.
Please send me a copy of the Solvay Products Book which will give me complete information on all Solvay Products.

Name_____

Firm_____

Address_____

City_____ State_____ BM-8-40

NEWS ABOUT MEN

Ernest O'Callaghan, associated for the last six years with Nolde & Horst Sales Co., has joined the New York office of May Hosiery Mills.

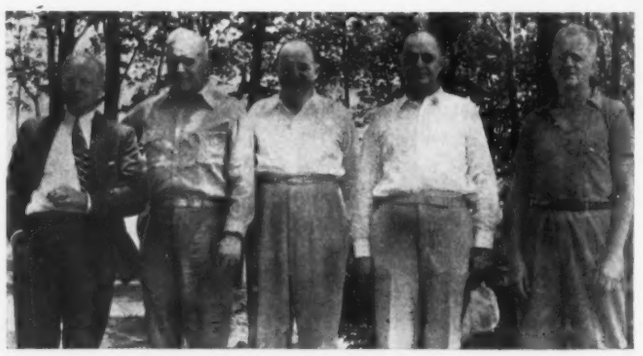
Wallace B. Coates, Jr., has retired as agent of the Farwell Bleachery, Lawrence, Mass., after having been connected with the corporation since 1908. His son, **Douglas B. Coates,** is superintendent of the plant.

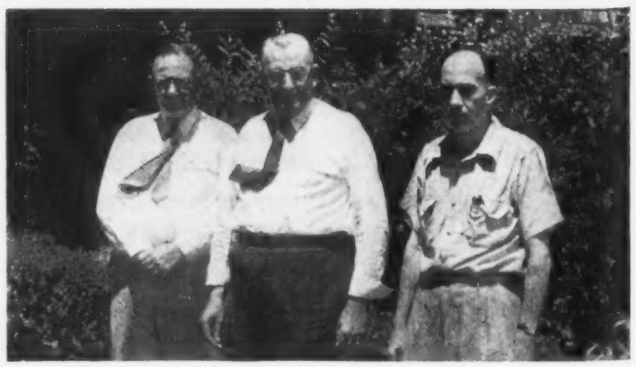
Dan F. Crumpton, superintendent of education, Clarksdale, Miss., has been elected president of the Delta Staple Cotton Festival Association and will be in charge of the staging of Coahoma County's 12th Annual Cotton Festival this fall.

S. E. Anderson is the newly elected treasurer of Jackson Mills, Nos. 1, 2 and 3, at Iva, S. C.; Wellford, S. C., and High Shoals, N. C. **Eugene M. Anderson** is the new secretary and assistant treasurer.

Charles S. Fowler has resigned as vice-president of National Silk Spinning Co., National Fabrics Corp., and Mallinson Fabrics Corp. He has organized a grey sales agency under the name of C. S. Fowler & Co. to be located at 1450 Broadway, New York. The agency will specialize in the distribution of spun yarn fabrics; rayon, acetate, and blends with the natural fibers.

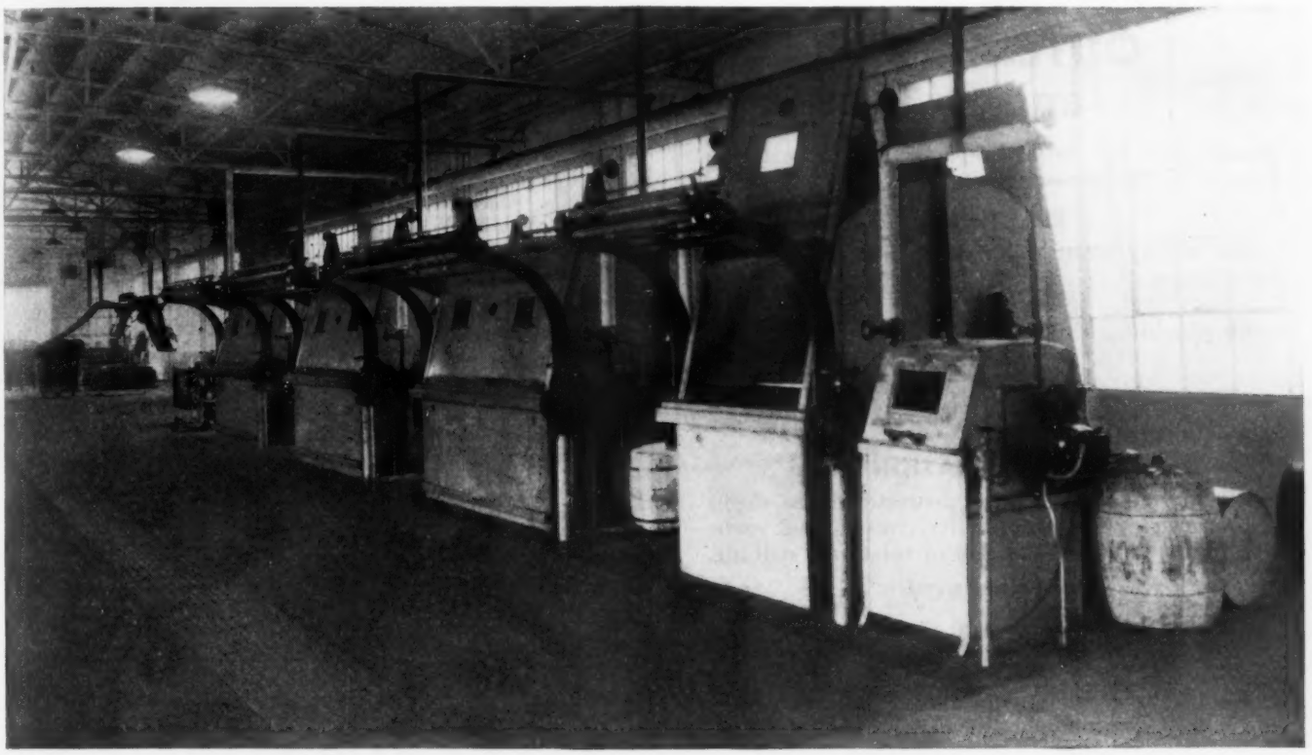
Charles S. Fowler, head of the newly organized C. S. Fowler & Co., as he looked while at Sarasota, Fla., last winter.





PHILADELPHIA TEXTILE MANUFACTURERS ASSOCIATION held its 14th annual outing at Oreland, Pa., June 19. Upper picture (snapped at the outing) shows, left to right, H. W. Anderson, Fidelity Machine Works, chairman of arrangements; J. Albert Hayes, Brecht & Hayes Co.; Robert E. Carre, Jonathan Ring Co.; Arthur B. Otto, Jonathan Ring Co., and president of the association; Clarence E. Doan. Lower picture, left to right, shows Walter Markel, manager of the free employment bureau of the Philadelphia Textile Manufacturers' Association; C. Marlin Bell, General Manager of the association; E. K. Pierson, assistant to the general manager

EAGLE DYEING AND FINISHING COMPANY CHOOSES *Hunter* STAINLESS PIECE DYE UNITS



Battery of Hunter Model NK all enclosed Stainless Steel Kettles at Mt. Holly, New Jersey. Three more units have been added since this photograph was taken.

In keeping with the most exacting modern demands for low cost dye house operation, Eagle Dyeing and Finishing Company has chosen Hunter Stainless Steel Kettles for its new finishing plant. They chose Hunter because the new Stainless Model NK offers the user these distinct advantages among others:

1. Completely vibrationless construction—all driving and driven members supported in newly designed separate frames.
2. Vari-speed drive for main reel for greater flexibility.
3. A size and type for any piece dyeing or bleaching requirement.
4. Tight top enclosure which is windowed and lighted . . . saves up to 35% of steam for the dyeing cycle.
5. Proved performance on fabrics ranging from mohair plushes, tapestries, woolens, worsteds, unions, blankets, to rayon suitings.

If you contemplate replacing or expanding your present dye house units, it will pay you to ask Hunter for details.

JAMES HUNTER MACHINE COMPANY

NORTH ADAMS, MASSACHUSETTS — SINCE 1847

Southern Representatives
CAROLINA SPECIALTY COMPANY
Charlotte, North Carolina

Western Representative
MR. E. G. PAULES
343 Bendix Building
Los Angeles, California

ULTIMATE CONSUMERS
OF
UNDERWEAR
OUTERWEAR
and SWIM SUITS

like to find the following characteristics in the fabrics of the garments they buy:

ELASTICITY

—the ability to stretch freely and spring back into shape.

COMFORT

—no pinching, binding, sagging, or pulling.

LONG WEAR

—like shock absorbers, elastic fabrics absorb damaging strains.

HEAT INSULATION

—the human body is best protected from rapid temperature changes by lofty, unstrained yarns holding an adequate content of relatively still air.

ABSORBENCY

—perspiration is absorbed most rapidly and thoroughly by lofty, unstrained yarns.

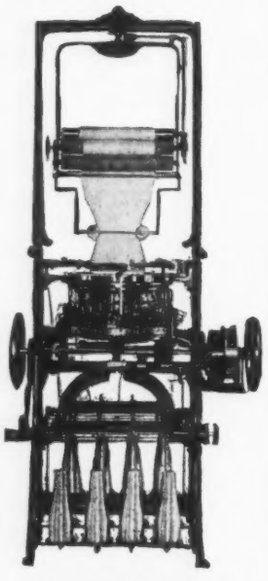
ALL THESE CHARACTERISTICS

—are best attained on the Cooper rib machine, as explained below.

IF YOU OPERATE COOPERS, YOU MAY TRUTHFULLY

TELL YOUR CUSTOMERS
THE KNIT-GOODS BUYERS

THAT, because your fabrics were knit on the famous COOPER SPRING-NEEDLE RIB MACHINE, they are *naturally* elastic. On the Cooper machine the yarn is *fed* to the needles in just the proper amount to form fine, elastic, well-rounded, unstrained loops. Therefore, since the needles do not have to pull the yarn to themselves, there is no danger of stretch reducing the yarn's natural elasticity or of one needle loop pulling yarn from another. Furthermore, on spring needles there are no needle parts to be operated by the yarn. It is no wonder, therefore, that Cooper rib fabrics—made on the *only* machines of their kind—are in a distinct class by themselves. Cooper fabrics present the highest attainment of the machine-knitting art.



PLEASE YOUR CUSTOMERS
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CHARLES COOPER COMPANY
INCORPORATED
BENNINGTON VERMONT, U. S. A.

NEWS ABOUT MEN

G. Raymond Hahn, head of the decorative fabrics division, Wellington Sears Co., New York, who previously made annual European tours in search of fabric inspiration is spending August on the Pacific coast to study style trends and market possibilities in the Southwest.

Randolph Brandt has been promoted from assistant treasurer to treasurer of Lockwood Co., Waterville, Me., succeeding **W. E. Winchester,** now president following resignation of **Gerrish H. Milliken.**

Max Wohl has been appointed vice-president in charge of sales for the Rayon Corp. of America, New York. He recently resigned from Celanese Corp. of America where he had been prominently identified with development of warp-knits for underwear.

Samuel S. Dale of Brookline, Mass., a former editor of *Textile World Record* of Boston, an antecedent publication of the present TEXTILE WORLD, has presented his two book collections of nearly 500 volumes referring to wool tariff matters and to weights and measures, to Boston University, where they will be housed in the library of the college of business administration. An index, carefully compiled by Mr. Dale, makes this group of rare books, manuscripts and reference works, particularly valuable to research workers.

Charles A. Gibson has become manager of the Kendall Co.'s mills in Pelzer, S. C. He has been in charge of the Turners Falls, Mass., unit, and his successor there is **Joseph D. Murray.**

Donald R. Green, treasurer of Farr Alpaca Co., has become connected with the Holyoke Farr Fabrics Corp.

Norman Bisanar, manager of Viewmont Knitting Co., Hickory, N. C., and an official of other mills, has become manager of Coca Cola Bottling Co., Concord, N. C.

William L. Meyer for some years office manager for American Viscose Corp., New York, has been made manager of a new department to be known as the Economics and Statistical Department, which will assemble and disseminate information within the company.

Prof. L. Da Costa Ward, of the chemistry and dyeing department of Philadelphia Textile School, has been loaned to the U. S. Army Quartermaster Depot for special service in connection with the National Defense program.

FAIR PHOTO-MURAL COMES TO LIFE—Posed under the life-like portrait of himself in a photo-mural adorning the walls of the Shelton Looms exhibit in the Ford Building at the New York World's Fair is Michael Brunnen, oldest living weaver of the company with which he has been connected for 42 years. He is 78 years old and was one of 300 Shelton employees who helped celebrate Shelton Looms Day on June 29. The photo-mural has been displayed at four fairs since 1934 and has been seen by 26,000,000 people.

J. Craig Smith, Sylacauga, Ala., vice-president of Avondale Mills, Birmingham, Ala. has been elected president of the Sylacauga Rotary Club.

Ridley Watts, Jr., has been admitted as a partner in the textile commission house of Taylor, Clapp & Beall, New York. He was a member of the old firm of Ridley Watts & Co., headed by his father, until its liquidation in 1930.

W. C. Neely has been elected secretary of the Clinton (S.C.) Cotton Mills.

Vincent Lyons has resigned his connection with the Scripps-Howard newspapers, to join the public relations department of Celanese Corp. of America, New York.

Laurence B. Stein has been appointed selling agent for Riverside Woolen Mills, Stafford Springs, Conn. He will be located in New York.

Walter Bluh, who recently retired from Lincoln Fabrics, Inc., New York, has joined the Marvlo Mills' organization, New York, to manage a sportswear fabric department.

Carl L. Miller, Philadelphia, has been appointed sales representative in that territory for the Newnan (Ga.) Cotton Mills.

AMERICAN INSTITUTE OF LAUNDERING
Announces
A NEW RESEARCH SERVICE
for
THE TEXTILE INDUSTRY

RECOGNIZING that consumer satisfaction in washable merchandise is the joint responsibility of the textile and laundry industries, the American Institute of Laundering is introducing a new research membership available to any organization interested in pre-determining and improving the performance of textiles.

New fibers, new mixtures, new processes, new finishes—all tend to make more complex the selling and servicing of textiles. Spun rayons and resin compounds, for instance, present entirely new problems—problems which must be answered before real consumer satisfaction is assured.

And always in the foreground is the question of launderability—because that is the question for which every informed consumer demands a prompt answer.

The purpose of the Institute's new research program is to make available to the textile industry, on a membership basis, the specialized facilities of its laboratory and its modernly equipped commercial laundry unit—the official "proving and improving ground" of the commercial laundry industry.

Pre-determining fabric performance under practical conditions solves problems that stand in the way of *better wearing, better laundering, better selling textiles.*

Your inquiry regarding this significant new development is cordially invited. Full particulars will be furnished promptly.

AMERICAN INSTITUTE OF LAUNDERING
405 West 23rd Street, New York—Chelsea 2-4130
Headquarters and Laboratory: Joliet, Illinois

IMPORTANT NOTE

The Institute's new Research Service is entirely separate from the Laundry-Tested and Appro ed Seal program which carries the right to use the Institute Seal in merchandise promotion.

The New Research Membership Offers These Advantages:

1. INFORMATION ON LAUNDERING PROCEDURES — Complete information available on practice and theory of commercial laundry procedures! fabric launderability data; washing formulas and testing procedures.
2. DATA ON CONSUMER ACCEPTANCE—Information on consumer acceptance of washable merchandise, based on the Institute's research coordinated with the experience of the laundry industry.
3. RESEARCH SERVICE — Scientific investigation of products, processes, etc., relating to the textile and laundry industries.
4. CONSULTATIVE SERVICE — Consultation by mail, or in person at the Institute's laboratory, concerning any research project as above.
5. TECHNICAL REPORTS—Issued by the Institute, with permission for their use in the textile trade.

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For rubber, textiles, paper, leather, wire

HENRY L. SCOTT CO., Providence, R. I.

NEWS ABOUT MEN

Rudolph Sanctuary, for the last 31 years with Jamestown Worsted Mills as designer of women's wear, has been appointed superintendent of the Dorence Worsted Co., Philadelphia, Pa.

R. Norman Brown, formerly chief designer at Fulton (N.Y.) Mills of American Woolen Co., has been appointed mill manager of Leach Textiles, Ltd., Huntingdon, Quebec, succeeding **A. Fawcett,** who resigned to become president of the newly organized worsted firm of Fawcett & Grant, Ltd.

Sidney Solomon recently with Textile Design Co., New York, has formed Amalgamated Design Co., New York, to supply fabric designs to the textile trade.

Edward H. Look, of American Viscose Corp., will assume **Graeme G. Whytlaw's** duties in the Providence, R. I., office of the company. Mr. Whytlaw will join the Sales Development Department at the Marcus Hook, Pa., plant of the company. **F. Douglas Cudlipp** will take Mr. Look's place in the Economics and Statistics Department in the New York office. **Cyril Sumner Jr.** has joined the sales force at Providence.

R. L. Harris, secretary of Roxboro (N.C.) Cotton Mills, is Democratic nominee for lieutenant-governor of North Carolina.

Samuel Ross, former State Senator, and a trustee of the New Bedford Textile School, New Bedford, Mass., since it was organized 40 years ago, has been reappointed a trustee, along with **James B. Sullivan,** superintendent of carding and spinning at Soule Mill, New Bedford. Appointed as new trustees of the school by Governor Saltonstall are **Joseph Dawson, Jr.,** manager of the Knowles Loom Reed Works; **Gustave Lamarche,** overseer at Wamsutta Mill; and **Raymond McEvoy** of Stoughton, a graduate of the school and former State commander of the American Legion.

Major A. L. Fletcher, formerly assistant administrator of the Federal Wage-Hour Law in charge of the cooperation and inspection branch, has accepted the position of regional director for Region 6 with headquarters in Charlotte, N. C. Major Fletcher was formerly head of the N. C. State Labor Department.

E. L. Morrow, secretary and treasurer of the hosiery mills at Grenada, Miss., operated by Grenada Industries, Inc., has resigned to enter another business.

Jefferson H. Robbins has accepted position as overseer of spinning with Gaffney (S.C.) Mfg. Co. He was formerly with the Gayle unit of Springs Cotton Mills.

John F. Brasch Jr., has become superintendent of Habersham (Ga.) Mills. He was formerly head of the spinning department at Louisville (Ky.) Textiles, Inc.

William A. Bower, head of the reeling department in Wood Worstead Mill of American Woolen Co., an overseer there for the last 32 years, has retired. He was presented with a purse on behalf of the Overseers Association by **Walter M. Lamont,** mill agent. He is succeeded by **Walter Worsman,** a section hand in the spinning department for the last 20 years.

Alfred R. Haler, superintendent of the Cowan Mill, Lewiston, Maine, has resigned to become associated with Warren Woolen Co., Stafford Springs, Conn.

W. E. Grant is now second hand in weave room of Sally B plant of Avondale Mills, Sylacauga, Ala. He was formerly with Bibb Mfg. Co., Columbus, Ga.

Frank Crossley has accepted position as foreman of carding of Berkshire Fine Spinning Associates, Adams, Mass. He was with the cotton mill of Farr Alpaca Co., Holyoke, for several years and in 1939 went to New Bedford with the Kendall mill.

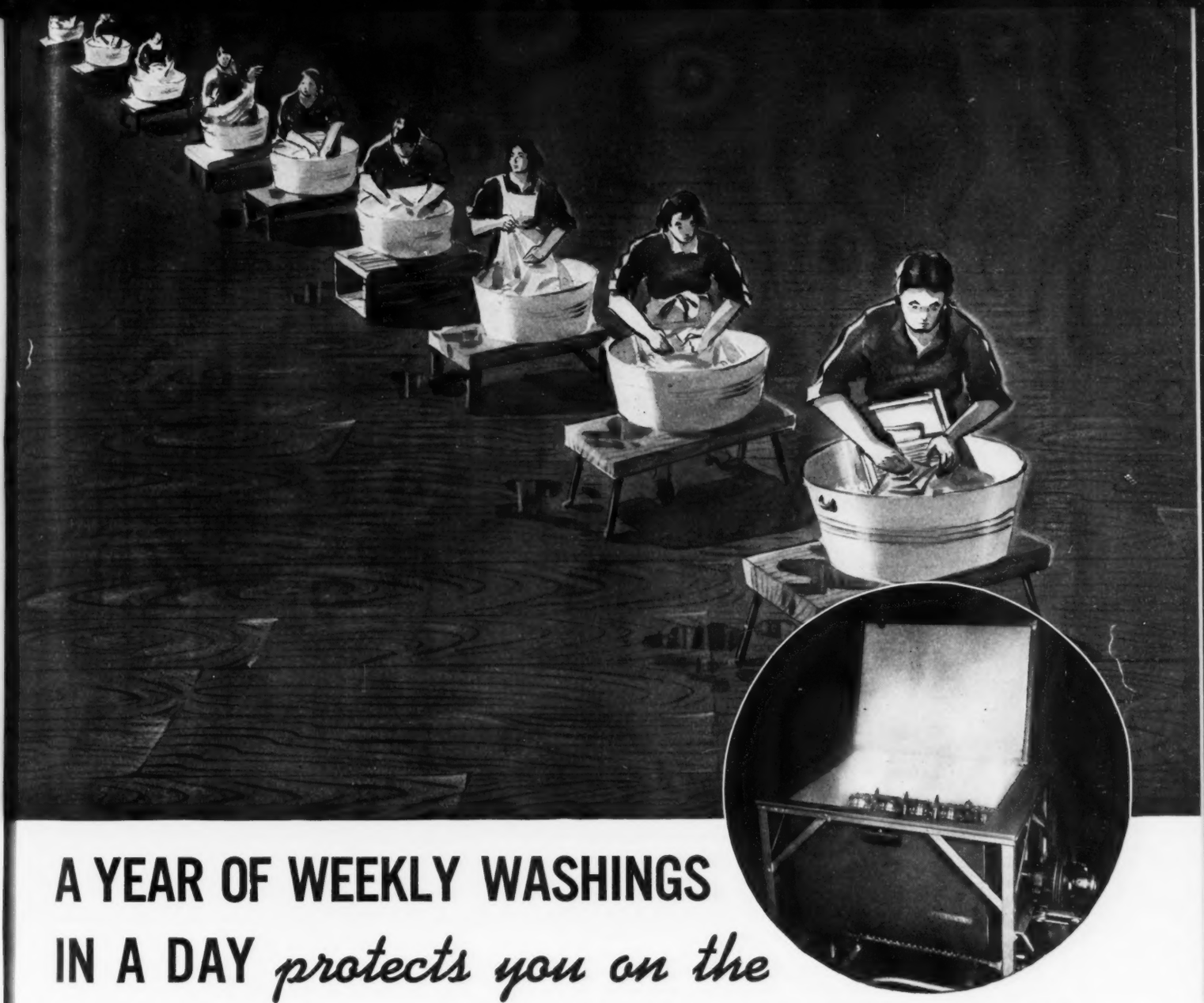
Miss Nellie Brown, after having served for a greater period of time than any woman on the records of the Bigelow-Sanford Carpet Co., Thomsonville, Conn., retired July 18 on pension. Her retirement on the eve of her 70th birthday marks the completion of 60 years with the company.

Nelson Hart, of Gonic, has become foreman of the shipping and perching department at Wyandotte Woolen Mill, Rochester, N. H.

Robert A. Austin, dye department assistant at Cocheco Mfg. Co., East Rochester, N. H., has resigned to take an overseer's position in Agawam, Mass.

Wiley Barker has become overseer of the cloth room of Exposition Cotton Mills, Atlanta, Ga. He was with Anchor Duck Mills, Rome, Ga.

R. A. Field, Jr., is the new superintendent of No. 6 plant of Riverside & Dan River Cotton Mills, Danville, Va. Mr. Field was formerly general superintendent of the Newnan (Ga.) Cotton Mills.



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National Printing Vats disperse instantly. True-to-shade, run after run, they reproduce every fine line and stipple of the printing roll with the clear-cut sharpness of a designer's working drawing. The brilliance of National Vat colors gives your prints preference in the trade.

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CHICAGO	357 W. Erie St.	GREENSBORO	Jefferson Standard Bldg.	PORTLAND, ORE.	646 N. Thompson St.
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NEW YORK BOSTON PHILADELPHIA CHARLOTTE

STOP Weight Losses!

Control costs and safeguard your profits with rapid, accurate weighing! Valuable new Howe Scale folder illustrates the latest models of modern weighing machines, ranging from 1/64 oz. to 30 tons. Developed from more than eighty years' accumulated experience. Write for it today. The Howe Scale Company, 604 Scale Ave., Rutland, Vermont.

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Circular Knitting Machines
Cylinders and Dials
3-Color Yarn Selector & Knot Tyer
Fringe & Tassel Machines
Giant Package Winders
Raschel Machines
Ribbers
Wire Covering Machines
Belt Loop Cutters
Pocket Folding Machines
Special Machines designed and built

For efficient multiple-spool winding with uniformly smooth lay. Winds from barrel or pin swifts, cops, cones, etc. Write for catalog.

FIDELITY MACHINE CO.
3908-18 Frankford Ave., Philadelphia, Pa.

NEWS ABOUT MEN

Albert E. Webster, superintendent of the finishing department of American Thread Co., Holyoke, Mass., retired June 28 after 51 years service. He is 71 years old.

R. P. Warren is the new superintendent of Bristol (Tenn.) Weaving Co. He was formerly superintendent of the Gloria Rayon Mills, Johnson City.

Ralph N. Mallard has become superintendent of Linen Thread Co., Blue Mountain, Ala.

R. W. Hollis has resigned as superintendent of Alabama Mills, Aliceville, Ala.

J. M. Frazier, for many years superintendent of the Trio Mfg. Co., Forsyth, Ga., has been retired at the age of 82 years.

W. H. Pearman is instructor and director of the vocational textile school of the Wennonah Cotton Mills, Lexington, N. C. Before coming to Lexington, Mr. Pearman was associated with several large textile machinery builders.

A. B. Nanney has been promoted from night overseer of spinning at the Gayle unit of Springs Cotton Mills, Chester, S. C., to day overseer of the same department.

Gerald Castle has become superintendent of the Miller-Smith Hosiery Mills, Kingsport, Tenn.

A. H. Hammond, assistant plant accountant at the rayon staple fiber unit of American Viscose Corp., Nitro, W. Va., has been transferred to the office of the company at Wilmington, Del.

Joseph P. Erkes, formerly of Clinton, Mass., has arrived in Rock Hill, S. C., and will be in charge of the operations of Samarkand Rug Co., a new concern, which is installing machinery and will operate in the former Wymojo unit of Textiles, Inc.

W. N. Scoggins has become superintendent of Alabama Mills, Aliceville, Ala.

Jess Pascall, superintendent of Salem (Va.) Full-Fashioned Mills, has been transferred to the Townhouse Hosiery Mill, Chilhowie, Va., in a similar capacity.

L. M. Kincaid, superintendent of the mechanical department of Kendall Co., Paw Creek, N. C., has resigned to accept a similar position with Wiscassett Mills, Albemarle, N. C.

Obituary

Sir Prince Prince-Smith, 71, president of Prince-Smith & Stells, Ltd., Keighley, England, died July 2. He was great grandson of the founder of the firm which is widely known for its wool combing, drawing, spinning and twisting machinery. The firm has been represented in this country for 56 years by Atkinson, Haserick & Co., Boston.

Clarence V. Fencil, 67, for many years treasurer of Lengel-Fencil Co., Reading, Pa., and Anniston, Ala., died July 11.

George L. Hardwick, Sr., 78, president of Hardwick Woolen Mills, died July 12 at his home in Cleveland, Tenn.

Alexander F. Shaw, president and plant manager of Greenville (R. I.) Finishing Co., died recently.

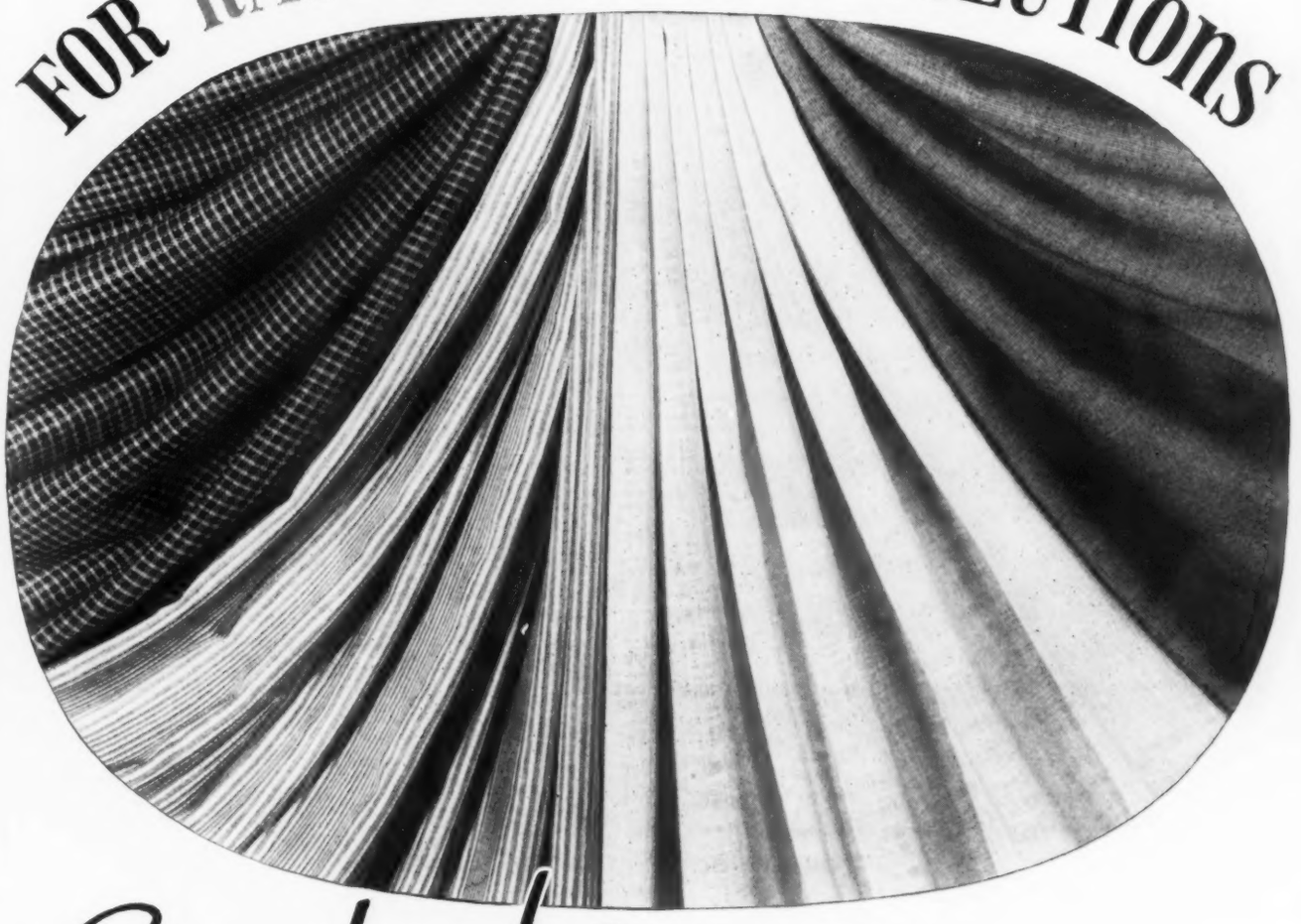
James M. Morton, formerly president of Sagamore Mfg. Co., Fall River, Mass., died recently. For some years he was a U. S. Circuit Court judge.

Ernest A. DeWolf, 73, consulting engineer for Universal Winding Co., Providence, R. I., died last month. In point of service he was the company's oldest employee having served for 48 years. From 1900 to 1914 he was in charge of engineering for the firm's European interests and established branch plants in England, France and Switzerland.

Ernest A. DeWolf

Louis I. Guion, 73, former superintendent of the Norwood Mfg. Co. and later manager of Columbia (S. C.) Duck Mills, died July 11. He was at one time southern representative of William D'Olier & Co. He turned to farming many

FOR RAYON BOIL-OFF SOLUTIONS



Standard SODIUM METASILICATE

Improve your boil-off solutions for Rayon Piece-Goods* by using *Standard Metasilicate.*

Its efficient emulsifying and detergent characteristics produce more level dyeing properties and brighter colors.

The smaller amounts necessary for proper pH values and its soap-sustaining power make *Standard Metasilicate* highly economical.

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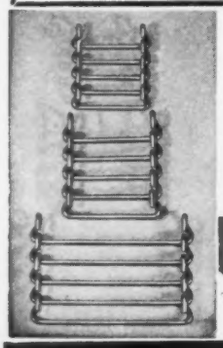

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Accurately made from high grade material—built to last and to hold its shape.

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The ideal tool for cleaning out slots in sinker and divider heads. Made in all gauges. Each one comes in a leather carrying case.

Send for bulletin giving full details on these and other products.

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ONGER UNIFORMITY OF PRODUCT

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STEEL PRODUCTS COMPANY
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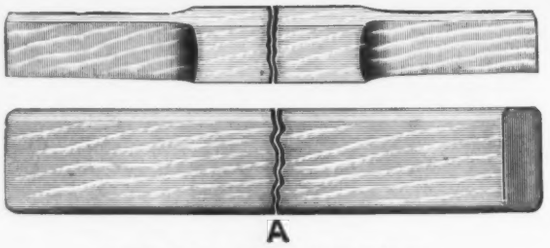

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NOVELTY-YARNS
For
WEAVERS-KNITTERS
MONTGOMERY
WINDSOR LOCKS, CONN.
Designers and Spinners of Novelty Yarns

NEWS ABOUT MEN

years ago and became one of the largest planters in South Carolina.

Thomas F. Walters, 73, for more than 20 years overseer of the spinning department of the Chronicle Mill, Belmont, N. C., died July 10.

Charles A. Sparks, 71, departmental superintendent of Saxon Mills, Chesnee, S. C., for a number of years, died July 11.

Mrs. May Gray Separk, wife of Joseph H. Separk, leading textile executive, died July 30 at her home in Gastonia, N. C. She was the eldest daughter of George A. Gray, one of Gaston County's pioneer textile executives. Mrs. Separk was a leader in the "Wear Cotton" movement in 1930, from which grew National Cotton Week.

Frank Davis, once superintendent of Amidon Mill, now Abbott Worsted Mill, in Wilton, N. H., died in Worcester, Mass., July 4.

Percy W. P. Hargreaves, 49, superintendent of Warren (R. I.) Textile & Machinery Supply Co., died at Fall River, Mass., July 11. He was a native of Fall River and had been with the Warren company 24 years.

William Almy, 67, formerly vice-president of Newmarket Mfg. Co., Lowell, Mass., died at Dartmouth, Mass., June 29. He retired 10 years ago.

Horace Simonson, credit manager for Corticelli Silk Co., New York, for 20 years until he retired in 1930, died at Summit, N. J., recently.

Dan H. Wallace, 65, southern manager of Keever Starch Co., Greenville, S. C., died suddenly July 28.

Arnold Aldrich Wilkinson, 78, president and treasurer of American Multiple Fabric Co., Providence, R. I., died in that city on July 10. He entered the textile field in 1881.

George B. Schwartz, 75, president and treasurer of the Eagle Dye Works, Hartford, Conn., died in that city on July 10.

Joel T. Rice, 91, one of the organizers of the Belton (S. C.) Cotton Mills, a former mayor and industrialist, died June 25 at a Belton hospital.

Harry Hunter, 52, past-president of New England Carpet Club and for many years an executive of Thomas L. Leedom Carpet Mfg. Co., Bristol, Pa., died July 16. He resided in Arlington, Mass.

J. Quince Gilkey, 66, who organized and for many years operated the Gilkey Homespun Co., Marion, N. C., died July 3.

Archibald McDowell, Sr., 78, organizer, secretary, treasurer, and later president of the Scotland Neck (N. C.) Cotton Mills, died recently at his home in that place.

August Wagner, 75, head of H. Riehl & Son, Philadelphia, textile machinery manufacturers, died recently. He was connected with the firm for more than 40 years.

William G. Irving, 39, for 15 years superintendent of finishing at Blue Ridge Woolen Co., Chambersburg, Pa., and for the last year associated with Hampshire Woolen Co., Ware, Mass., died in the latter town recently.

Benjamin F. Grobe, 54, for the last 20 years western representative of the North American Chemical Co., Cambridge, Mass., died in Madison, Wis., recently.

L. N. Chandler, 56, in charge of carding and spinning at Mills Mill, Greenville, S. C., died there recently.

George W. Ronne, 82, a director of the Providence (R. I.) Dye, Bleach & Calendering Co., died recently. He had been connected with finishing plants for many years.

Frederick M. McNair, 46, assistant to the control manager of Fabrics and Finishes Department of E. I. du Pont de Nemours & Co., Wilmington, Del., died recently.

Charles Lewis Tarver, 66, president of Tarver, Steel & Co., Memphis, Tenn., died recently. He was formerly head of the Dallas Cotton Exchange and at one time president of the Texas Cotton Association.

William Henry Harrington, 48, eastern sales manager of New Departure, division of General Motors, Bristol, Conn., died July 13.

Frederick W. Hoppin, 70, veteran manufacturer and distributor of thread, and proprietor of Fredzel Products Co., Worcester, Mass., died July 1. His home was in Framingham, Mass.

Edward C. Wray, 61, for 30 years yard foreman of Revolution Cotton Mills, Greensboro, N. C., died in that city July 26.

Hugh K. Wilkey, 53, purchasing agent for Signal Knitting Mills, Chattanooga, Tenn., died recently.

William A. Gould, a sales representative of American Supply Co., Providence, R. I., died in New York July 2. He had represented the company in New England and the South for the last 20 years.

YARMOR* 302

WETS
DISPERSES
SUSPENDS

IN RAW
WOOL SCOURING

Fluffier wool is the result when Yarmor is used. Spinning and weaving are easier, and softer finished goods are obtained.

YARMOR* 302, the triple-action assistant, works wonders in all wet-processing. It is a penetrant, dispersant, and detergent-assistant, and is easy to emulsify.

In wool-scouring, Yarmor brings detergents in intimate contact with all dirt and grease—by reducing surface and interfacial tension to a point where the scouring liquor can reach the base of the dirty fibers. Once the soil is loose, Yarmor keeps it that way, and prevents the formation of insoluble precipitates that might deposit on the stock. Clean, soft, really white wool is the result; wool that does not rancidify in storage; wool that is soft and fluffy enough to spin, weave, and finish with a minimum of trouble. Yarmor also saves money by reducing the necessary amounts of soda ash and soap.

Yarmor 302, the triple-action assistant, is efficient and economical for all wet-processing operations—including dyeing—on wool, cotton, silk, rayon. Because Yarmor 302 is highly concentrated, a little does a lot and does it well. If you want to know what a really good wet-processing aid can do for you, try Yarmor 302. Write today for trial amount.

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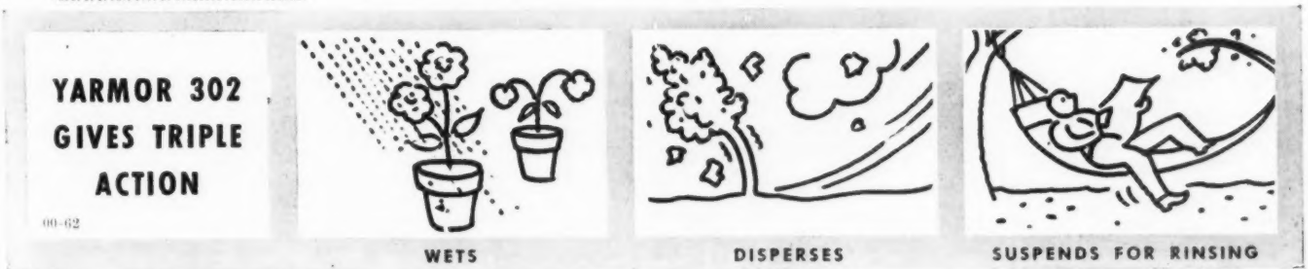
Naval Stores Department

HERCULES POWDER COMPANY

WILMINGTON, DELAWARE



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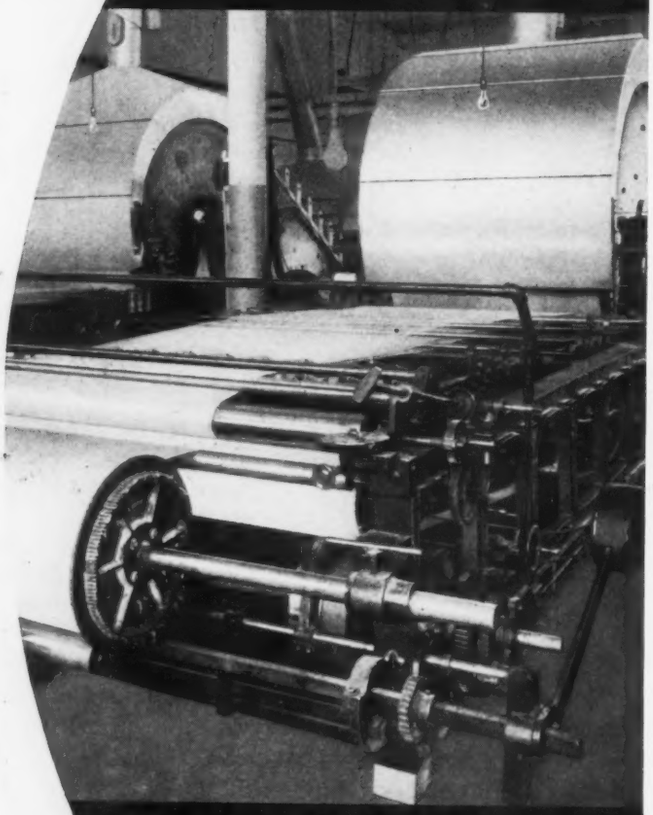
★SERVICE

Warp Sizing Starches



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Boston, Mass.

MILL STARCHES
CORN PRODUCTS REFINING CO.

TEXTILE MILL NEWS

Cotton Mill News

Arkwright (S. C.) **Mills** are installing about $20,000 worth of sanitary facilities in the houses of the mill village.

Balston Yarn Mills, Inc., Lincolnton, N. C., will soon begin manufacture of fine combed specialty yarns.

Bremen (Ga.) **Mill** has nearly completed one-story addition 40 x 40 ft., and will proceed with equipment installation. Capacity will be increased.

Cannon Mills Co., York S. C., will soon complete an extensive modernization program at cost of $100,000.

Commander Mills, Inc., Sand Springs, Okla., are installing 776 looms and accessory equipment, in new two-story addition, 164 x 235 ft., recently completed, and illustrated in this department last month.

Cramerton (N. C.) **Mills** plan replacing 100 box looms with new Draper looms.

Erwin Cotton Mills, Durham, N. C., are building extension to the boiler room of the No. 1 and No. 4 plants. J. E. Sirrine & Co., Greenville, S. C., are the engineers and Wm. Muirhead Construction Co., Durham, has building contract. The work includes boiler replacements costing over $100,000. Building is 55 x 55 ft., brick walls, steel sash, steel framing, concrete floors, wooden roof decking and 20-year tar and gravel roof, monitor type.

Marshall Field & Co., Draper, N. C., have work nearing completion on one-story addition to local mill, to be used for warehouse. Company is arranging for early removal of dyehouse from Rhode Island mill at Spray, N. C., to Draper mill.

Glencoe Cotton Mills, Columbia, S. C., have recently been purchased by G. O. Feil of Atlanta, Ga., for $25,000.

Goodyear - Clearwater Mills, Cedartown, Ga., have added new carding machinery in No. 1 plant and have built a cotton warehouse.

Groves Thread Co., Gastonia, N. C., has purchased two high-speed Foster winders for Unit No. 2. This new equipment is replacing four older models.

Hathaway Mfg. Co., New Bedford, Mass., has awarded contract for construction of a storage unit. George Williams, South Dartmouth, has the general contract.

Icard (N. C.) **Cordage Co.** has completed an addition which measures 40 x 75 ft., for stockroom and shipping department.

January & Wood Co., Maysville, Ky., has let general contract to Fiske-Carter Construction Co., Greenville, S. C., for one-story addition for warehouse. Cost about $25,000, with equipment. J. E. Sirrine & Co., Greenville, S. C., are consulting engineers.

Maysville (Ky.) **Cotton Mills** has awarded contract to Fiske-Carter Construction Co., Greenville, S. C., for a two-story warehouse, 102 x 102 ft. J. E. Sirrine & Co., Greenville, are the engineers.

McComb (Miss.) **Mfg. Co.** is being dismantled, the Crescent Corp. of Fall River, Mass., announces and the equipment is being sold piecemeal.

Melville Mills, Inc., Lincolnton, N. C., has installed 1,000 additional spindles.

Nelson Cotton Mills Co., Whitnel, N. C., is installing twelve 300-spindle Whitin twister frames in No. 1 plant and twenty 300-spindle long draft spinning frames in No. 2 plant together with two one-process interdraft slubbers from roving frames and one one-process picker.

Newton-National Corp., Newton, N. C., has been recently organized to manufacture yarn, cloth, thread, and elastic webbings.

Oakdale Cotton Mills, Jamestown, N. C., manufacturing white and colored twine and yarns has installed new equipment including a new Whitin Spira-whirl opener.

Oxford (N. C.) **Cotton Mills** plan a modernization program, which will include erection of addition between picker room and opening room, 80 x 60 ft., and installation of new carding machinery and other equipment.

Pacific Mills, Columbia, S. C., has sold 574 homes occupied by mill employees in Columbia to R. E. Ebert, of Greenville, former paymaster and accountant at the mill, for $250,000. Mill operatives are to be given first opportunity to purchase the homes, and the property withheld from the general public for six months.

Patterson Mills Co., Inc., Roanoke Rapids, N. C., has let general contract to C. M. Guest & Sons, Anderson, S. C., for modernization and improve-

TWIST *from* CHEESES *wound on the Automatic Spooler*

Minimum costs in both spooling and twisting departments can be obtained by twisting from cheeses wound on Automatic Spoolers.

- ABOVE, Twisting coarse yarn from cheeses, using skewers rotating on plain spindles.
- LEFT, Twisting fine yarn from cheeses, using ball bearing skewers.
- The Twister Creels shown here were designed by Barber-Colman Company for application to standard twisting frames.

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ALLEN HOLLOW Hex Socket SCREWS FOR TEXTILE MACHINERY

Heads set flush with machine surfaces; no sharp edges to catch fabrics; no slots to burr and pull threads. Strongest, handiest screws to use; hold tight under vibration. Ask for *free samples* — indicate types and sizes wanted.
ALLEN MFG. CO., Hartford, Ct.

Have you tried—
Booth Quality
Card Clothing
Benjamin Booth Co.
Allegheny Ave. & Janney St. PHILADELPHIA

ments, including removal of all existing sawtooth roofs on mill buildings, and replacement with new monitor-type roofing, including cork insulation, and tar and gravel roofing. J. E. Sirrine & Co., Greenville, S. C., are engineers.

Robinson Yarn Mills, Dallas, N. C., are re-roofing the mills and new machinery is being installed to bring the equipment up-to-date.

Russell Mfg. Co., Middletown, Conn., has awarded contract to Denis O'Brien & Sons, Inc., for repairing and rebuilding the Upper Mill Pond Dam. Company now has its new plant replacing one destroyed by fire last March, in full operation.

J. C. Sanders Cotton Mill Co., Mobile, Ala., unit, is replacing some looms with 36-inch Model E Drapers.

Springs Cotton Mills, Fort Mill, S. C., unit, is spending $100,000 on a new addition and new machinery. When completed, the mill will have 104,000 spindles and will rank next to the Lancaster unit in size. Springstein Unit, Chester, S. C., has installed 40 cards in new addition; also 24 new Whitin spinning frames.

Standard-Coosa-Thatcher Co., Piedmont, Ala., is installing 48 new H & B spinning frames, and 16 new H & B 8 x 4, five-roll, 176-spindle long-draft speeders. An Abington vacuum stripping system has been applied to the cards.

Travora Mfg. Co., Graham, N. C., has enlarged its finishing department at a cost of $75,000.

Watts Mill, Laurens, S. C., is constructing a new sewerage system for its village. J. E. Sirrine & Co., Greenville, S. C., is engineer. Reed & Abee, Inc., Asheville, N. C., has contract.

Wennonah Cotton Mill, Lexington, N. C., has established a vocational school for training in overhauling spinning, twisting and winding machines.

Wool Mill News

Baron Woolen Mills, Brigham City, Utah, are erecting a 45x75 ft. addition to contain one set of cards, one mule and six looms. This doubles the size of the mill.

Beattie Mfg. Co., Little Falls, N. J., is erecting two-story and basement addition, 42x175 ft., for which general contract was let recently to J. H. Steele & Sons, Inc., Paterson, N. J. Cost estimated close to $100,000, with equipment.

Charlottesville (Va.) **Woolen Mills** have awarded general contract to C. L. Lewis, Lynchburg, Va., for one-story addition, for dyehouse.

Cherry Brook Worsted Co., Woonsocket, R. I., has been petitioned into bankruptcy.

Collins & Aikman Corp., Philadelphia, Pa., has awarded general contract to Elmer Cuthbertson for one-story addition to mill at 51st. St. and Parkside Ave.

Deering, Milliken & Co., New York, have resumed occupancy of the Pondicherry Woolen Mill, Bridgton, Me.

Energetic Worsted Co., Bridgeport, Pa., is occupying a new $7,000, two-story addition.

Hampton Looms, Bedford, Va., are building an addition which will cost $75,000.

Kunhardt Mills, Lawrence, Mass., long idle, will shortly be placed on the market by vote of the city council, following acquisition of a clear title to the property from the Massachusetts Land Court.

Royal Woolen Mill, Sabattus, Me., suffered loss of a stock shed by fire involving damage of about $10,000.

Uxbridge (Mass.) **Worsted Co.** is considering construction of new one-story branch mill at Macon, Ga., with weave shed entirely underground for facility in controlling humidity and temperature.

West Texas Woolen Mills, Eldorado, Tex., organized by J. M. Christian, is setting up machinery and expects to start operation this month on the manufacture of suitings, blankets, yarns, neckties, batting, scarves and other items.

White Mill, Dexter, Me., was nearly destroyed by fire last month. A brick building containing a picker and the boiler room were saved.

Rayon and Silk Mills

Alkahn Silk Label Co., Paterson, N. J., has taken over mill and machinery of Hudson Woven Label Co., West New York, N. J., and will operate as a branch mill.

American Viscose Co., Wilmington, Del., has plans maturing for expansion and improvements at mills in Meadville, Pa., and Nitro, W. Va., reported to cost over $150,000. Ballinger Co., Philadelphia, Pa., is engineer. At the Roanoke, Va., plant, company has begun construction on one of six new reeling sheds. New type processing machinery will be installed and operation will begin in December.

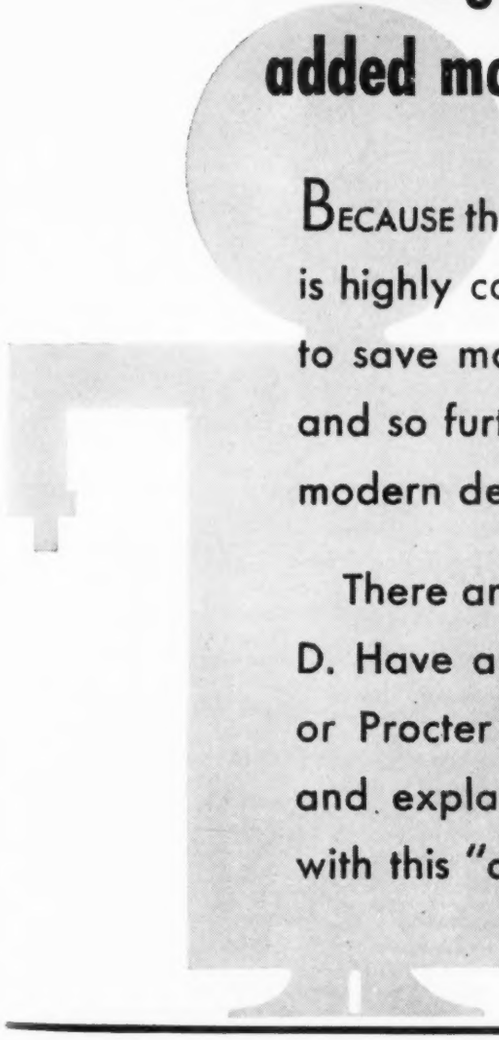
NEW

MODINAL* D

A highly concentrated detergent with added money-saving advantages for you

BECAUSE this fatty alcohol sulfate paste is highly concentrated, it enables you to save money on handling and use, and so further broadens the base for modern detergents.

There are many uses for "Modinal" D. Have a representative of Du Pont or Procter & Gamble call upon you and explain the economies possible with this "all-use" detergent.



* "Modinal" is the trademark used by the Gardinol Corporation to designate a group of its fatty alcohol sulfates.

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PARAMOUNT Dual Heat Hosiery Finishing Machine

CREATING Incomparable Quality in Hosiery Finishing and Establishing Production Figures that are truly amazing, the Paramount Dual Heat Machine will revolutionize and simplify your hosiery drying and finishing methods.

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Machines will pay for themselves in direct savings to you.

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Paramount Textile Machinery Company

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TEXTILE MILL NEWS

Androscoggin Mills, Lewiston, Me., will devote production exclusively to rayon goods in future, and mill facilities in all departments will be converted for this purpose.

Bristol (Tenn.) **Weaving Co.** has installed 24 additional looms.

Canadian Silk Products Corp., Ltd., Sherbrooke, Que., plans one-story and basement addition, 120x130 ft. Cost close to $90,000. J. C. Day, Montreal, Que., is architect and engineer.

Celanese Corp. of America reports net profit of $4,522,580 for first half of 1940 compared with net profit for same period in 1939 of $3,027,774.

D. A. Deviney and **M. O. Dickinson,** both formerly associated with Spencer Mills, Spindale, N. C., have established a mill for winding and processing cotton, rayon and silk yarns at Rutherfordton, N. C.

Duchess Throwing Co., Statesville, N. C., branch of Burlington Mills Corp., is now installing machinery in the building which formerly housed the Duchess Fabrics Corp.

E. I. du Pont de Nemours Co. is acquiring approximately 800 acres near Morgantown, W. Va., as a site for a plant extension. Raw material for Nylon may be made there. The second Nylon yarn unit at Seaford, Del., should be erected by December and operating by July, 1941.

Esther Mill Co., Shelby, N. C., is installing new machinery to permit production of wider range of rayon dress fabrics.

Industrial Rayon Corp. reports net profit for first six months of 1940 of $1,048,357, compared with net profit for first half of 1939 of $54,776.

North American Rayon Corp. reports net earnings for second quarter of 1940 of $512,169, compared with $292,002 for same period in 1939.

Pittsfield (N. H.) **Weaving Co.** has enlarged its plant by a 38x42 ft. section, housing eight new looms, and an 18x38 ft. section for designing and storage. Space is available for additional looms.

Quebec Rayon Mills, Ltd., Sherbrooke, Que., plan one-story addition. Cost estimated close to $50,000, including equipment.

Skenandoa Rayon Corp., Utica, N. Y., has made improvements and repairs in machinery and equipment in all departments of mill, including power house. Plant recently was closed for this purpose.

Tubize Chatillon Corp. reports net profit for first half of 1940 of $702,375 compared with $303,066 for similar period in 1939.

Wayne Mfg. Co., Waynesboro, Va., will soon complete work on a 165x300 ft. building, which with machinery will cost more than $50,000. Silk and rayon fabrics will be manufactured.

Knitting Mills News

Belding-Corticelli, Ltd., Montreal, Canada, has installed two Reiner "Auto" heelers.

Berkley Silk Hosiery Co., Paterson, N. J., was sold in liquidation July 18.

Bradley Knitting Co., Delavan, Wis., filed a petition in Federal court July 10 asking financial reorganization under the federal bankruptcy act. John N. O'Brien, Delavan, was named trustee. Hearing is set for Aug. 26.

Brownhill & Kramer Co., Coudersport, Pa., awarded contracts for construction of a 60x70 ft., one-story brick, concrete and steel addition to its hosiery mill, North Main St., that city, to house additional knitting equipment and furnish employment for 100 persons.

Clark Hosiery Mills, Marietta, Ga., is opening a unit at Burlington, N. C., and will occupy the building formerly used by Full-Knit Hosiery Co.

Cooper-Wells & Co., Decatur, Ala., has completed an addition in which five additional machines have been installed.

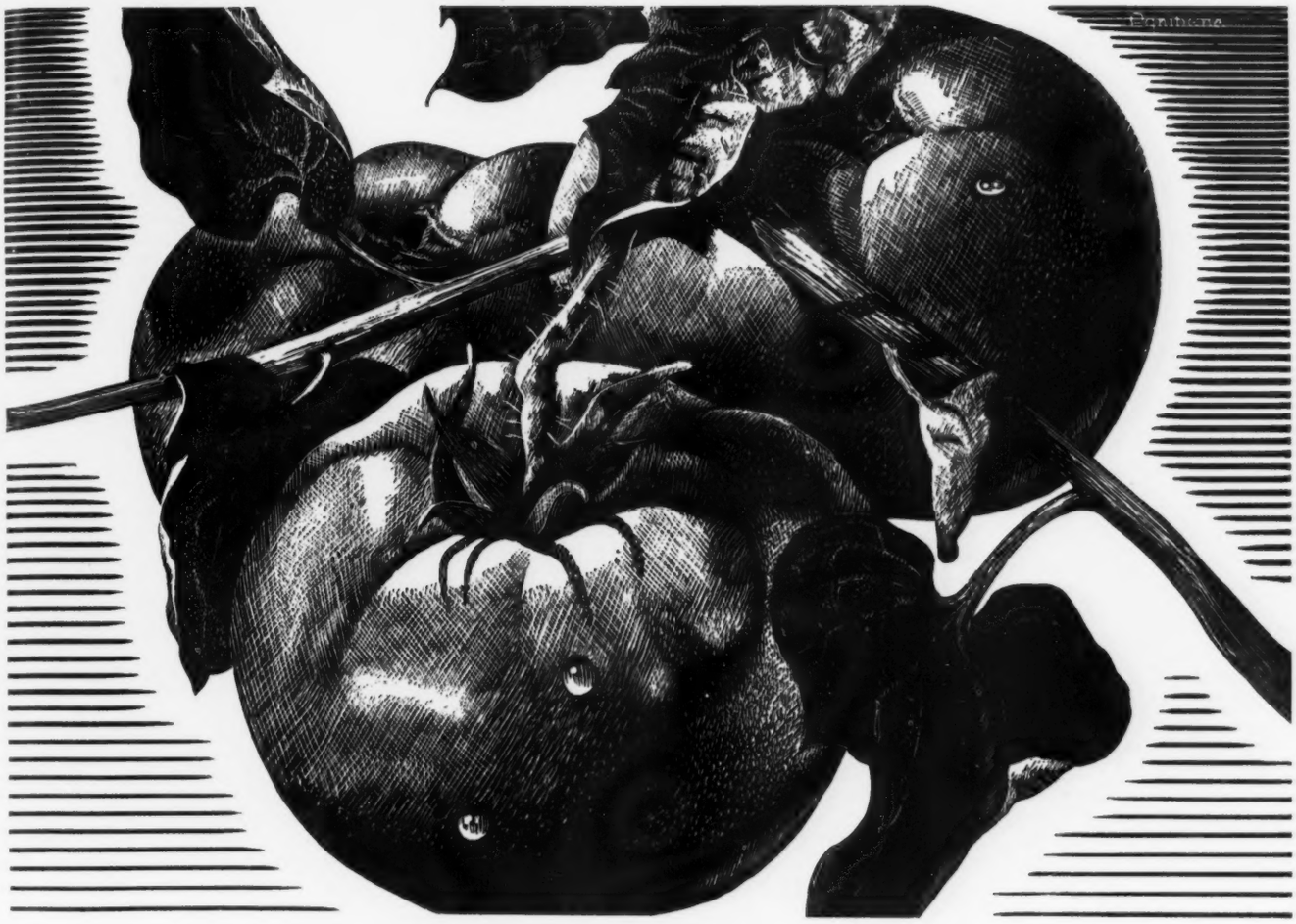
Cumberland Homestead, Crossville, Tenn., hosiery mill continues to add additional machines and more operatives. Present plans call for the installation of 30 machines, with space available for 18 more.

Gardiner-Warring Co., Florence, Ala., has installed new high-speed machinery in the sewing and knitting departments.

Eleanor Hosiery Mill, Elkins Park, Ala., has been chartered to engage in the manufacture of full-fashioned hosiery.

Erntex Knitting Mills, Inc., Gilbertsville, Pa., will rebuild portion of mill recently damaged by fire, caused by lightning. Official estimate of loss was not announced.

Herbert Hosiery Mills, Inc., Norristown, Pa., have awarded contract to Haverstick-Borthwick Co., Philadelphia, Pa., for alterations and improvements in mill. An award for new elevator units



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Style C80—Straight 80 fine pins
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DRUMMOND SOAP

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RAYON

in National Defense

will be featured in

Textile World's 16th Annual

RAYON NUMBER

September, 1940

Five broad phases of "Synthetics in National Defense" will be presented next month as the theme of the Annual Rayon Number; plus practical mill-operations articles covering the following subjects: "New Finishes for Rayon"; "Knitting Nylon Hosiery"; "Spinning Rayon Staple Blends"; "Layouts of Rayon Fabrics for 1941"; "Latest Trends in Rayon Throwing"; and "Knitting Rayon Underwear Fabrics".

An issue you will want to read from cover to cover and retain for future reference.

has been made to Paris Elevator Co., Philadelphia.

Infant Socks, Inc., Middletown, Pa., has a new location in the Wincroft Stove Co. building. In this new location the company plans day and night operation increasing production to 2,500 pairs of socks per day.

Jersild Knitting Corp., Neenah, Wis., has filed articles of incorporation. Capital stock is set at 1,200 shares. Incorporators are W. B. Bellack, W. C. Jersild and E. A. Kalfahs, all of Neenah.

Kay Toe Hosiery Mills, North Wales, Pa., have opened an additional unit in Kulpsville, Pa.

Kingwood (W. Va.) **Hosiery Mills** have been established by Adams McCaughy and Wm. I. Pidcock for the manufacture of full-fashioned hosiery in the gray.

Louis Lavitt Co. and **Knit-Sox Hosiery Mills,** Hickory, N. C., will soon occupy a new two-story brick building costing about $15,000. **Duke Hosiery Corp.,** Hickory, N. C., now sharing the Lavitt Plant, has leased the entire building for seven years and will expand its operations.

Lutz Hosiery Mills, Lenoir, N. C., has installed four additional machines.

May Hosiery Mills, Burlington, N. C., will operate a box factory in connection with their hosiery plant, the box-making equipment to cost $30,000. The mill uses six to seven million containers annually.

Mayor Russell of Waynesboro, Miss., and a committee of citizens of that city are negotiating to bring a knitting mill to Waynesboro.

McEwen Knitting Co., Burlington, N. C., will soon complete a two-story addition at a cost of $25,000. New machinery will be installed.

May Hosiery Mills, Inc., and **McEwen Knitting Co.,** Burlington, N. C., have arranged for a consolidation, under first noted name. Program will be consummated at final meeting Aug. 15.

Nollan Knitting Mills, Inc., has been incorporated in Los Angeles, Calif., with a capital of $25,000. Directors are: A. F. Harrington, of Los Angeles; Fred Nollan, of Inglewood, Calif., and Ruth E. Nollan, of Inglewood.

Owen-Osborne, Inc., Gainesville, Ga., has let general contract for one-story addition, 65x300 ft., to McCoy Construction Co., and will carry out erection during summer. Cost reported close to $100,000, with equipment. J. E. Sirrine & Co., Greenville, S. C., are consulting engineers. This is part of a program to double capacity of plant which will cost a total of $600,000.

Sapphire Hosiery Corp., New York, has been formed by Ralph J. and Theodore J. Schwarz to operate a plant in Philadelphia. Both men were lately with Artcraft Silk Hosiery Mills.

Standard Knitting Mills, Knoxville, Tenn., has constructed an addition which cost $25,000.

Thompson Hosiery Mill, Graham, N. C., is to be moved to the Aurora Cotton Mill Bldg. this month where more space will be used. Plant operates 125 knitters, 25 ribbers and 18 loopers.

Tru-Tex Hosiery Co., Mohnton, Pa., was sold by the U. S. Treasury Dept. for nonpayment of social security taxes. It was bought in by the government for $2,500.

Van Dyke Knitting Mills, McComb, Miss., has sold its machinery to J. Itzkowitz, 133 West 25th Street, New York City.

Allen H. Watkins, treasurer of the former Bogle-Watkins Corp., Greensboro, N. C., which has been liquidated, is reported to have plans under way for the establishment of a new seamless knitting mill at Greensboro this fall.

Wyatt Knitting Mills, Sanford, N. C., have completed installation of additional machines for production of full-fashioned hosiery and will place in service at once.

Processing Plant News

General Textile Dye & Finishing Works, Philadelphia, was damaged by fire on July 17.

Lanett (Ala.) **Bleachery & Dye Works** have completed three-story addition for a dye house expansion finishing department and storage room.

Lowell Bleachery, South., Griffin, Ga., has constructed a 102x110 ft. addition at a cost of $100,000.

O. K. Skein Dyeing Co., Paterson, N. J., a partnership for the last eight years has been incorporated with Otto Killian as president and general manager.

Weehawken (N. J.) **Piece Dye Works, Inc.,** have completed modernization of mill property on Hackensack Plank Rd., acquired a few months ago, and will put into operation. Its plant was destroyed by fire last February.

TE HNOLOGY DEPT.

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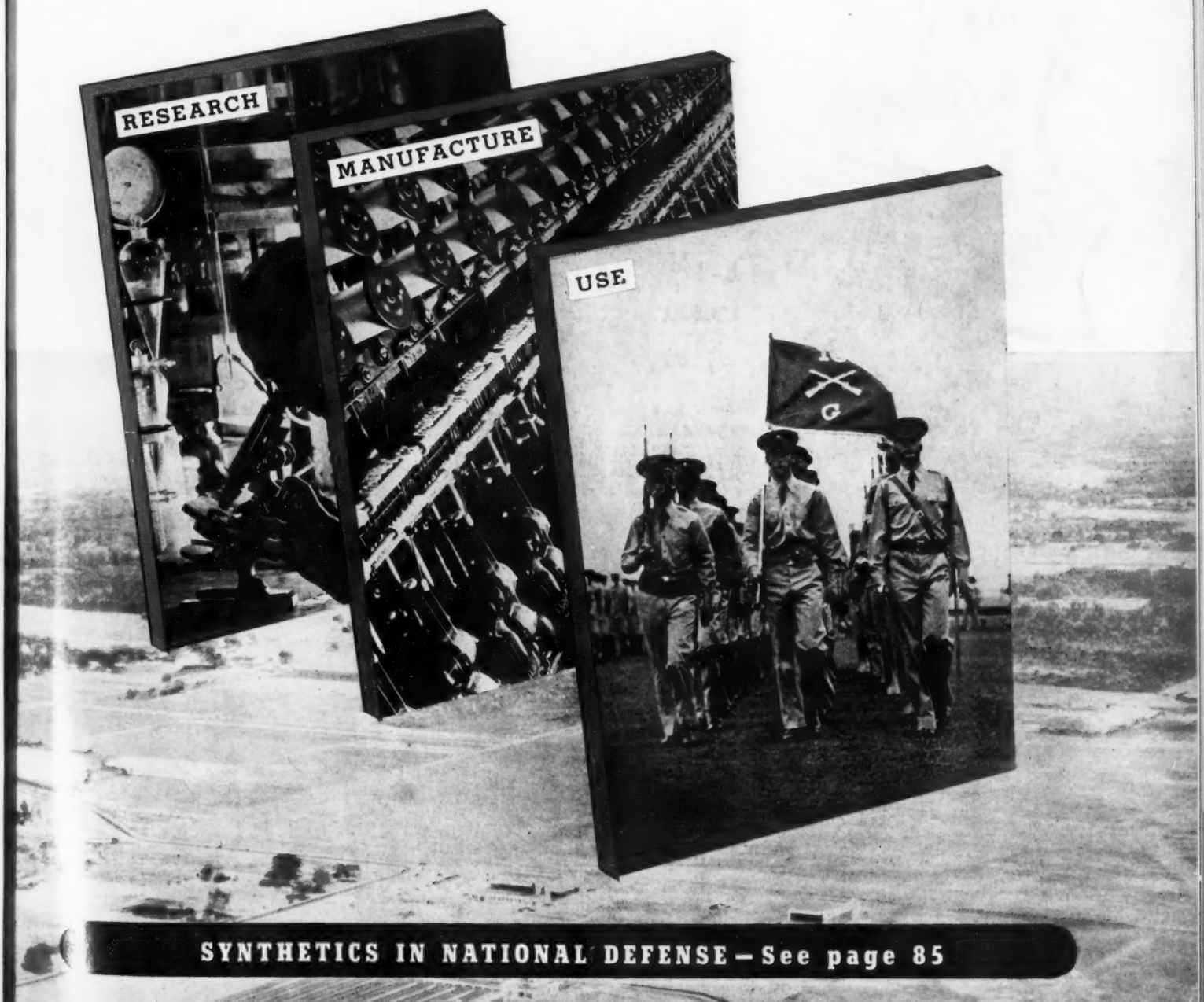
Textile World

ANNUAL RAYON NUMBER

SEPTEMBER, 1940



SYNTHETICS IN NATIONAL DEFENSE—See page 85

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Ready Cash
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Commercial Factoring

Many manufacturers have found this to be the ideal method of raising ready cash.

Under this plan, you receive ready cash from us as your shipments are made—yet you extend your regular terms to your customers. In addition, Commercial Factors Corporation assumes all credit losses and collection expense. Bookkeeping costs are reduced.

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Subscriptions: United States and Possessions, Canada and Latin American Republics, $1.50 a year, $2.00 for two years, $3.00 for three years. Great Britain and British Possessions 12 shillings for one year, 27 shillings for three years. All other Countries $2.00 for one year, $4.50 for three years. Entered as second class matter August 25, 1936, at Post Office, Albany, N. Y., under the act of March 3, 1879. Printed in U. S. A. Twenty-five cents per copy.

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By a Poor Reed and Improper Lining-up
of the Reed and Shuttle Box Plates
This Shuttle Shows One Extreme
in Length of Shuttle-life

On the Other Hand
Better Fixing and
Attention to
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Has Enabled
a 500-Loom Mill
to Lengthen the Life
of its Shuttles So That

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YOU PROFIT by the convenience of dealing with one engineering organization dedicated to the correct engineering and applying of drives and power transmission equipment to suit specific needs.

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✓ ***Silverstreak*** **SILENT CHAIN DRIVE**

The ideal drive for high speed power transmission. Records reaching back over thirty-five years testify to its outstanding performance. Trouble-free, low in first cost (frequently lower than belts), requiring practically no attention and little maintenance expense, always dependable, Link-Belt silent chain drive cuts production costs and increases machine efficiency.

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An all-metal, unusually compact unit, available for horizontal or vertical mountings in seven different models, hand or automatic control, the P.I.V. Gear offers you an opportunity for achieving simple, accurate, quick (within a fraction of a revolution) speed control. The range of sizes now extends from ½ to 15 H.P.

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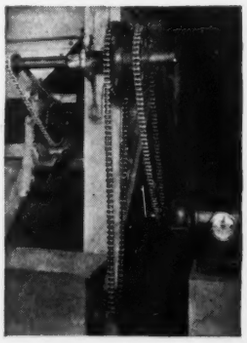
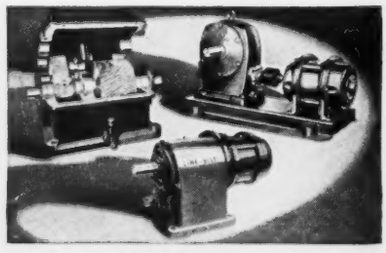
Engineers recognize the value of Silverlink's accurately finished, all-steel construction, built to the highest standards of precision . . . that it combines great strength with comparatively light weight . . . that it is extremely flexible, assures smooth operation, and is especially capable of withstanding severe shocks . . . that it minimizes wear and repair.





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Rayon Spinning

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That's why 85% of today's rayon is spun on Armstrong's Seamless Cork Cots

MOST mills want to cash in on the big swing to spun rayon yarns and fabrics. To mill men who may be apprehensive of trouble with the spinning of these new fibers, we want to offer full benefit of the experience other mills have been having with the running of staple rayon and mixtures on *cork* . . .

FOUR OUT OF EVERY FIVE mills successfully spinning rayon today are using Armstrong's Seamless Cork Cots. Government census figures show a round total of 700,000 spindles producing rayon; of this number, 85% are equipped with these modern roll coverings.

Here's why . . .

MADE TO ORDER FOR SPINNING RAYON are two qualities inherent in Armstrong's Cork Cots. First—cork has one of the highest coefficients of friction of all known substances. This makes drafting more uniform . . . with a minimum of slippage. And, since it grips better, cork drafts out bulky roving that other materials can't handle. Secondly—cork cots are *tough*. Staple rayon, being more wiry than cotton, is hard on ordinary rolls—but cork can take it! And, when a long-lived Armstrong's Cork Cot *does* begin to show signs of wear, it can be made as good as new by rebuffing. The cost of rebuffing is modest—about ½¢ per roll—and the life of each cot can be renewed *three or four times*.

LET AN ARMSTRONG MAN explain in detail *all* the advantages you can enjoy by changing over to seamless cork cots. He'll show how you can cut your roll covering costs 50% or more. Armstrong Cork Company, Industrial Division, Textile Products Section, 927 Arch Street, Lancaster, Pennsylvania.

ARMSTRONG'S *Extra Cushion* SEAMLESS CORK COTS

RIGHT FOR RAYON

Another Rayon Milestone

Comments by Henry G. Lord

Each year it seems as if there couldn't be any new records for the next Rayon Annual, but rayon development moves so fast that there always are. Here is an industry without centuries of precedent behind it; no hoary traditions of "always having done it so" to break away from.

A new rayon plant is like a new war plant. It fulfills its purpose of meeting the latest developments of the art, and within a few years is out of date by reason of new developments. It should be amortized far more quickly than the usual allowance for depreciation permits.

It seems to me that the development of the rayon industry has been the best example of science and business working together in a big way for the benefit of the consumer and without taking undue advantage of him. There have been big profits and big losses, but the balance has been no more than commensurate with the risk and huge investment. There has been no monopoly in restraint of trade; in fact, quite the contrary. Millions of dollars have been spent for research. It has not and never can be a static industry controlled by basic patents. The field of chemistry is too broad. It has been really a "survival of the fittest" in research, promotion, mechanical invention, production and merchandising, with world-wide competition and opportunity.

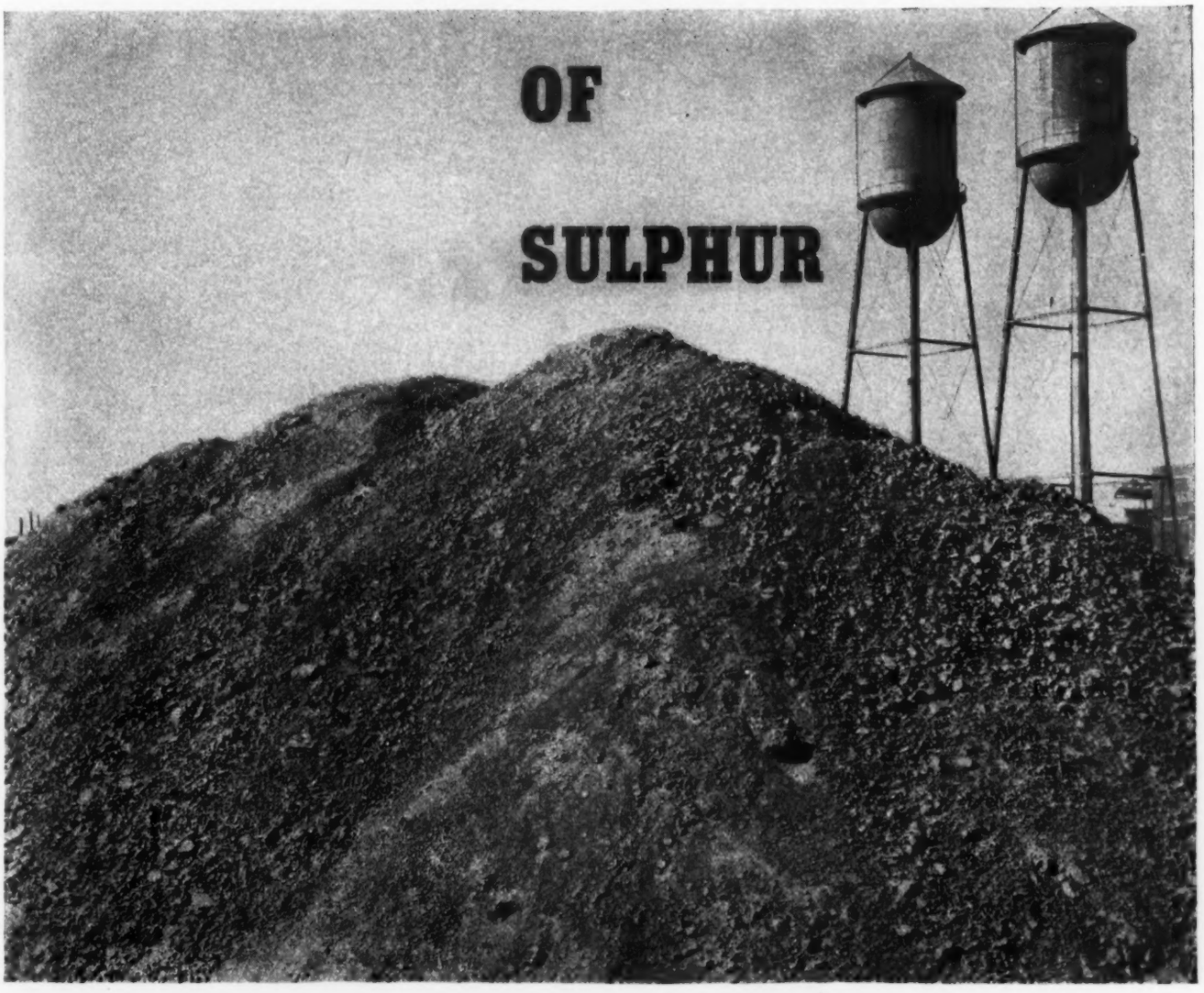
These *Textile World* Annual Rayon Issues have recorded the history of rayon. It is all there. Textile World has told the story of rayon from its very infancy; from the days of "wood silk," "artificial silk," and "art silk;" its statistics, its technical progress, its problems, its successes. It has been a consistent prophet of the great future for this man-made fiber which was to revolutionize the textile industry, not so much by replacement as by stimulation of the other branches and by cooperation with them to produce new and more attractive fabrics for the public.

There is new life in the textile industry today and rayon is very largely responsible for it.

HENRY G. LORD, *founder of Textile World in 1888 and president, Bragdon, Lord & Nagle Division, McGraw-Hill Publishing Co.*

ONE REASON
CALCO DYES ARE BETTER BUYS

30,000,000 POUNDS OF SULPHUR



Calco dyes are Calco made—from raw materials to finished dyestuff. In doing this Calco-size job we use 30,000,000 lbs. of sulphur a year.

Calco is a big producer—a dependable source of dyestuffs for *you!*

For Color in Textiles . . . it's

Calco

CALCO CHEMICAL DIVISION
AMERICAN CYANAMID COMPANY
BOUND BROOK, NEW JERSEY

Boston • Philadelphia • Providence • NewYork • Charlotte • Chicago

You can

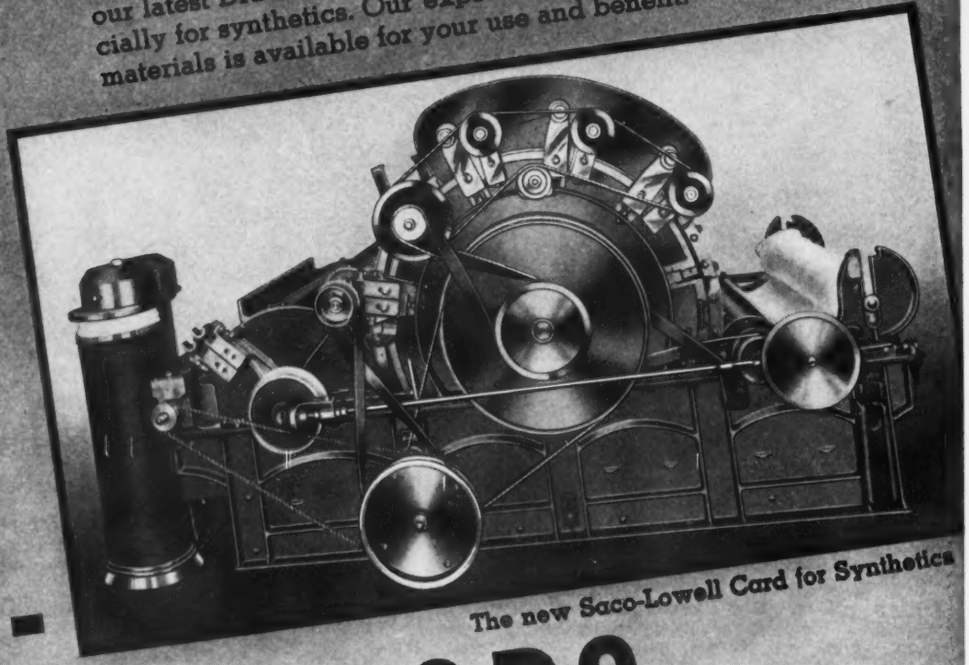
SAVE HOURS *and* **DOLLARS** *and avoid*

wasteful experimentation!

HOW? . . . by consulting our engineers before starting to spin SYNTHETIC STAPLES

With our new and special equipment, quality work is assured from the very beginning. These new units have been designed to conserve the fibre strength, improve appearance and reduce working costs incidental to processing simple or complex blends.

When your production demands the use of synthetics, consult our engineers about our new Opener . . . our new Card . . . and our latest Drawing, Roving and Spinning equipment built especially for synthetics. Our experience and work with these new materials is available for your use and benefit.

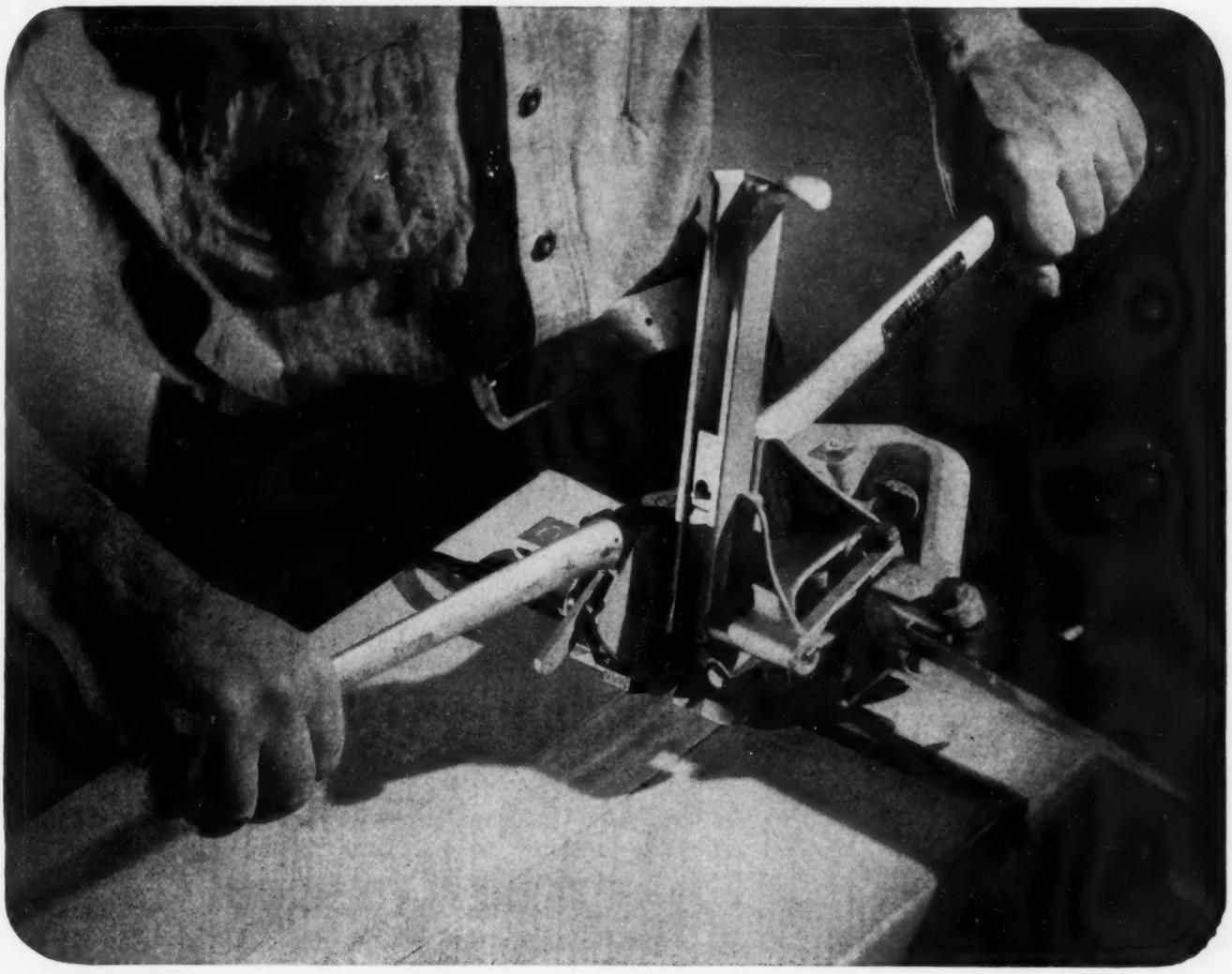


The new Saco-Lowell Card for Synthetics

SACO-LOWELL SHOPS

60 BATTERYMARCH STREET · BOSTON · MASS.

CHARLOTTE · GREENVILLE · ATLANTA



HOW TO ELIMINATE LOST MOTION

For Faster, Safer. Lower Cost Textile Shipments

THE speediest steelstrapping tool yet developed—the Acme Steelstrapper—combines tensioning, sealing and cutting operations with an automatic seal feed. Lost motion is eliminated.

With the application of the Acme Steelstrap Process, textile mills reduce the cost of time and material. Some carton packs when Acme Steelstrapped can be classified as bales. By bundling small packages into one complete unit, an easier, faster handled shipment is obtained. In protecting against pilferage and damage, Acme Steelstrap eliminates resultant claims and customer dissatisfaction.

Hundreds of mills standardize on Acme bale tie bands. The clean, smooth-finish strap provides adequate protection to the textile bales.

Why not make sure your shipping costs are the lowest possible? They will be—when you use the Acme Steelstrap Process. Send for the new illustrated booklet "Stopping Profit Leaks." It may suggest ways in which important cost reductions can be easily made. Just mail the coupon below . . . there is no obligation.

ACME STEEL COMPANY

603 Stewart Ave., S. W., Atlanta • 146 Summer St., Boston
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201 Lafayette Bldg., Philadelphia

Also branches and sales offices in other principal cities

ACME STEEL COMPANY
2838 Archer Avenue, Chicago, Ill.

Send a FREE copy of "Stopping Profit Leaks" ☐
Have the nearest Acme man call ☐

Name.....

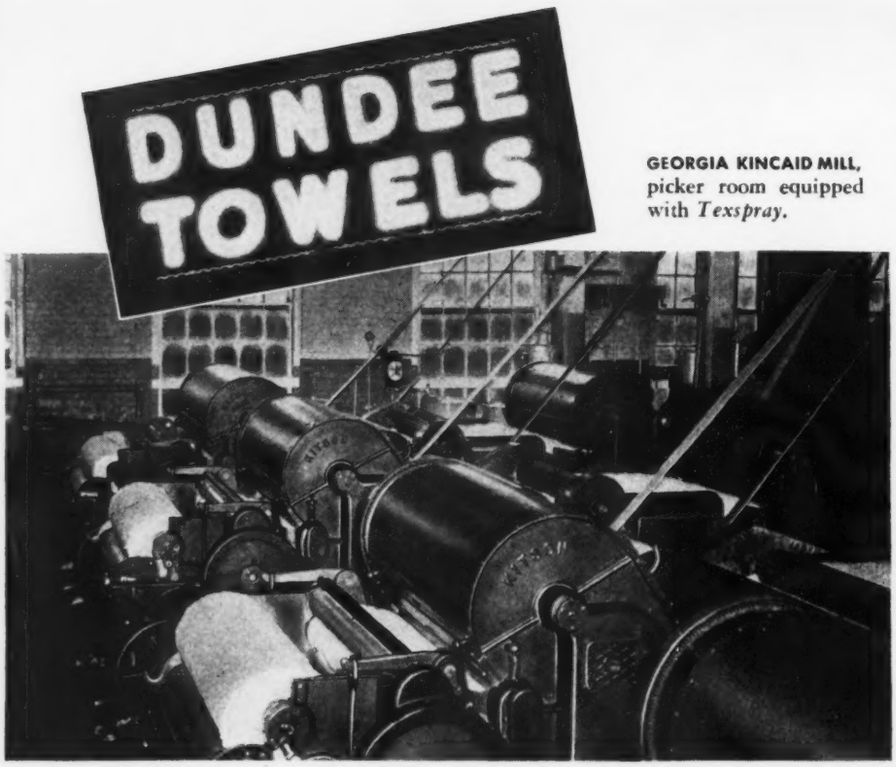
Address.....

City.....*State*.....

A SPINDLE SPECIALTY

Texaco Spindura Oil, a spindle oil which stubbornly resists oxidation, sludge formation, "fogging." You get better lubrication with less lubricant, avoid vibration and lagging, and produce more uniform yarn. (Write for this *TEXACO SPINDURA LEAFLET.*)

TEXACO SPINDURA



GEORGIA KINCAID MILL, picker room equipped with *Texspray.*

4 GEORGIA KINCAID MILLS MAKE CLEAN AIR PAY!

CLEAN AIR to breathe and a clean environment in which to work are making money by increased operating efficiency for the makers of Dundee Toweling, Griffin, Georgia.

These improvements have been enjoyed since their adoption some 5 years ago of the *TEXACO TEXSPRAY SYSTEM OF FIBRE CONDITIONING.*

Applied in the beater chambers of their pickers, *Texaco Texspray* reduces fly and dust, increases flexibility of the fibres, reduces static on the cards, and prevents breakage of long usable fibres.

The *Texaco Texspray System* is available only in recognized textile manufacturing centres of the U. S. A. If you are so located, you are invited to write for particulars to:

The Texas Company, 135 E. 42nd St., N. Y., N. Y.

FIBRE CONDITIONING, latest 32-page booklet explaining the *Texaco Texspray System.* Yours for the asking.

☆

TEXACO DEALERS INVITE YOU to tune in The Texaco Star Theatre —starring Kenny Baker and Frances Langford—Every Wednesday Night—Columbia Network—9:00 E.D.T., 8:00 E.S.T., 8:00 C.D.T., 7:00 C.S.T., 6:00 M.S.T., 5:00 P.S.T.

TEXACO

TEXACO Texspray System

If Your Floor-Maintenance Problem is Different . . .

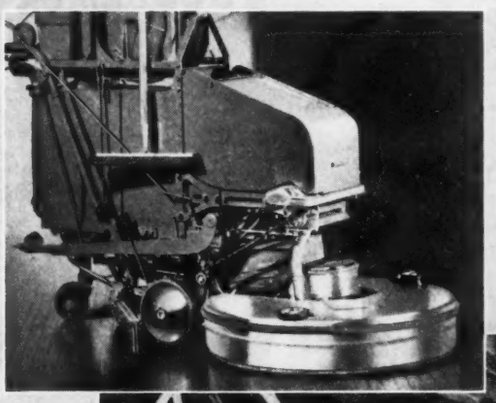
SOLVE IT WITH A *Job-Fitted* FINNELL!

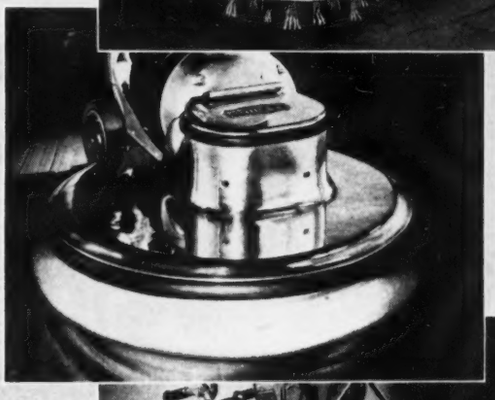
With a range of 49 different sizes and models, *Finnell* is equipped to offer a money-saving solution even to the most unusual of floor-maintenance problems. You see, *Finnell* fits the equipment to the specific need . . . gives you not only the model that best serves your requirements, but also the size that provides the greatest brush coverage consistent with the area and arrangement of your floors.

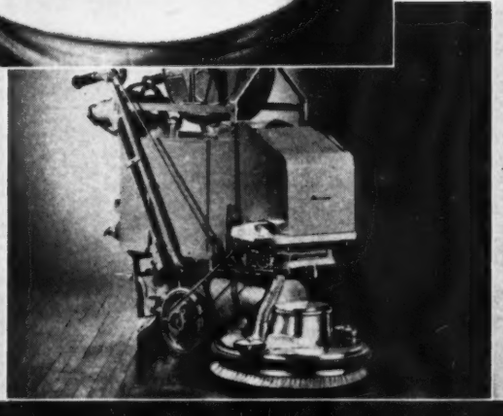
As an example of the extensiveness of the *Finnell* line of sizes, take the 400 Series shown here in the first illustration,—one of several *Combination Finnells* that scrub, rinse, and dry the floor. This model comes in *four sizes* . . . and each does the job considerably faster than the next smaller size.

The economy of a *Job-Fitted Finnell*, combined with the dependability of *Finnell* construction and performance, keeps maintenance costs at rock bottom. Let's talk it over. No obligation. Phone nearest *Finnell* branch, or write Finnell System, Inc., 1909 East Street, Elkhart, Indiana.

Note: The second illustration in panel at right shows a *Finnell* designed for hard-to-clean floors; it digs out the dirt. The third illustration shows a portable Scrubber-Polisher that's two sizes in one; the fourth, a Combination Scrubber for use in congested areas.







FINNELL SYSTEM, INC.

Pioneers and Specialists in FLOOR MAINTENANCE EQUIPMENT

Du Pont Rayon reflects the American Expectation of fine things from Du Pont

DUPONT RAYON
REG. U.S. PAT. OFF.

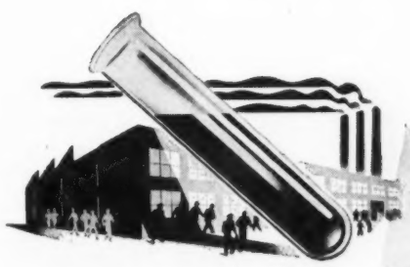
RAYON DIVISION, E. I. DU PONT DE NEMOURS & CO. (INC.), *Yarn*

Long before rayon became the great industry that it is today, the name du Pont signified a quality of progress in American living. The rising age of chemistry makes this name recurring conversation from mill yard to drawing room.☆☆☆ Some say it is surrounded with an aura of magic. As a matter of hard fact, it is surrounded with the public trust that rewards du Pont's years of expanding, useful research—du Pont's effort to give the public only the best that such research affords.

☆☆☆ Du Pont Rayon reflects and contributes to the du Pont standard. In the feminine world of drawing rooms, it is the measure of fine fashion. In the industrial world of mills, it is the measure of production excellence.

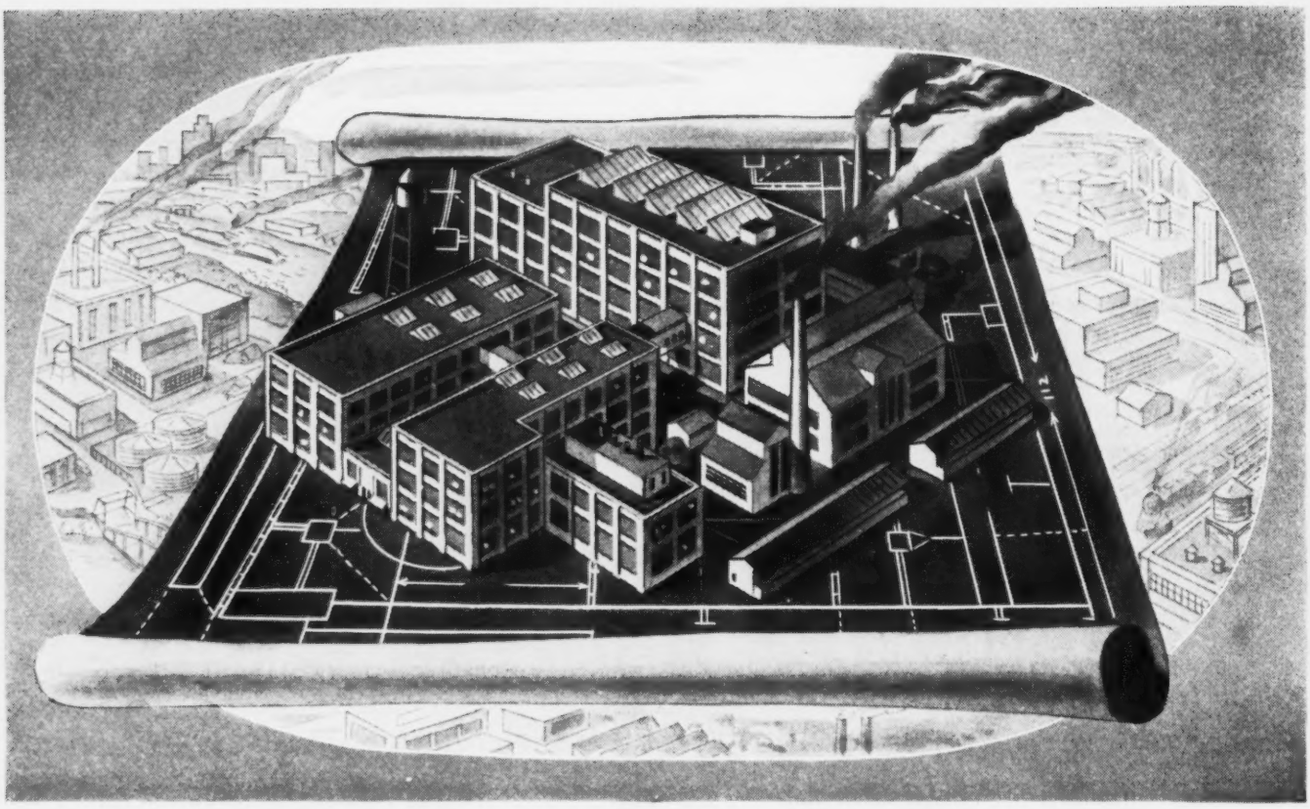
finer, ever finer

du pont rayon



DU PONT ON THE AIR—
Listen to "Cavalcade of America"—true tales of the America you love. Every Wednesday evening over N.B.C. red network, starting Oct. 2.

Specialists to the Class Market EMPIRE STATE BUILDING, NEW YORK



BEFORE YOU BUILD—

OR EXPAND YOUR PRESENT PLANT, GET THESE FACTS ABOUT THE ADVANTAGES OF ILLINOIS

The factors which make possible profitable operations for many industries in Illinois may make this State the logical location for your new plant, branch plant, warehouse, or distributing center. Illinois is the "business cross-roads" of the Nation, closer to the center of population, center of industry, center of agriculture, geographical center and sources of more raw materials than any other industrial State. You can improve your service and cut production and distribution costs in Illinois.

Investigate the ADDED PROFIT POSSIBILITIES of a plant or branch plant in Illinois, where you pay NO State Income Tax, NO State Machinery Tax, and NO State Real Estate Tax.

Special Confidential Report for Executives

Write the Illinois Development Council in Springfield, today, for detailed information on the labor and raw material supply, transportation and power facilities, fuel and water, housing facilities, and available buildings and plant-sites, as they apply to your business.

In order that a truly practical and informative report may be submitted to you, include full information about your manufacturing needs. Your inquiry will, of course, be kept strictly confidential. Write—

ILLINOIS DEVELOPMENT COUNCIL
STATE HOUSE • SPRINGFIELD, ILLINOIS

FACTS

MARKETS. Illinois is the center of the huge Middle West Market, with 50,000,000 population within overnight shipping radius.

EQUIPMENT. Illinois is the second largest metal-working State of the Nation, assuring manufacturers located here of adequate stocks and rapid deliveries of machines, tools, parts.

LABOR. A large labor supply, noted for its stability, and skilled in a wide variety of trades and occupations.

POWER. Power facilities ample for today's needs and geared to tomorrow's requirements, serve all Illinois in a vast interlocking system.

TRANSPORTATION. Illinois is the hub of rail and air transportation, and has the finest highway system in the Nation. Many important manufacturing centers are served by both the Lakes-to-the-Gulf Waterway, and the Great Lakes-St. Lawrence Waterway.

FUEL. Illinois is the third State in the Union in bituminous coal production and third in oil production, assuring ample fuel supplies at low transportation cost.

WATER. Abundant water supplies are available from eight great drainage basins in Illinois. Analyses showing flow of surface waters, underground supplies, and mineral content of water for any locality can be obtained on request.

ILLINOIS

THE STATE OF BALANCED ADVANTAGES

"I wish we could get all our speed changes on this machine electrically."
"We can, with the new Reliance V•S Drive."
Speed Ranges up to 12 to 1
RELIANCE V•S DRIVE

AN ALL-ELECTRIC ADJUSTABLE-SPEED DRIVE FOR A-C. CIRCUITS

Sizes—1 to 15 hp.

THIS new drive takes full advantage of the fact that the electric motor is not only a power unit but also provides within itself a simple method of speed changing. It enables you to get power closer to the place where power is needed and to eliminate intermediate speed-changing devices. It takes humps and bulges out of your machines —aids efficient, streamlined design.

Starting and stopping are as simple as ringing a door bell; speed changing easier than turning a doorknob. And there are no limitations on convenience. The start-stop button and speed changer can be placed anywhere that a wire can be run. Both are so compact that they can be grouped with other control elements for the machine.

And these features help production, too—quick stopping, reversing, safe speeds for threading and inching, ample starting torque with smooth acceleration, stopping and starting without interfering with the speed setting.

Ask for Bulletin 307, which gives details

Reliance Electric & Engineering Co.

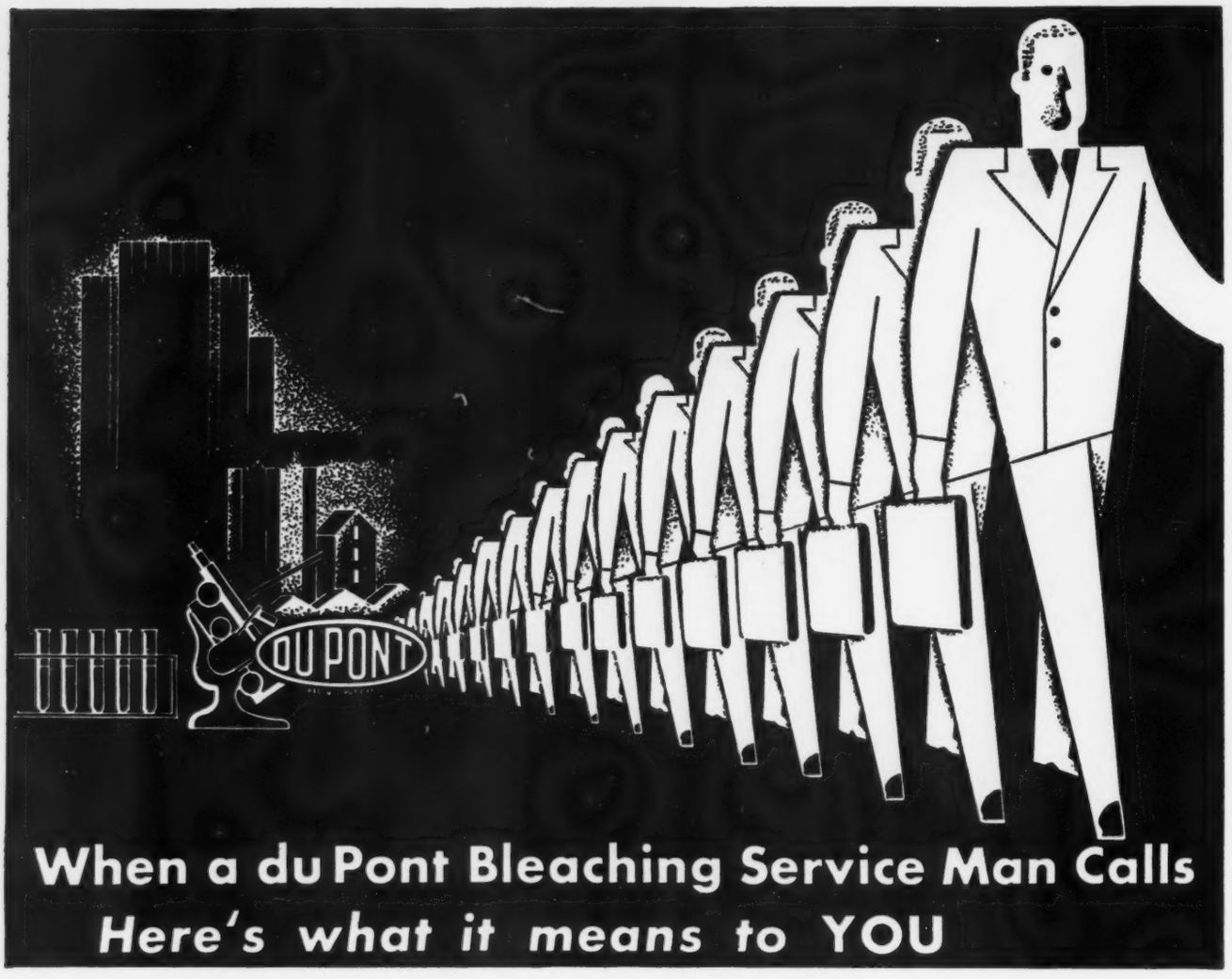
1086 Ivanhoe Road **Cleveland, Ohio**

Birmingham, Boston, Buffalo, Chicago, Cincinnati, Detroit, Greenville (S. C.), Los Angeles, New York, Philadelphia, Pittsburgh, Portland (Ore.), St. Louis, San Francisco, Syracuse (N. Y.), and other principal cities.

A Proven Principle of Speed Control

The Reliance V•S Drive employs a proven principle of speed control long used for large units. The "packaged" Speed Control Unit now makes available the smaller sizes for applications where cost has formerly prohibited their use.

RELIANCE A-C D-C MOTORS



When a du Pont Bleaching Service Man Calls

Here's what it means to YOU

HE COMES as a counselor and friend—a man who can be of assistance in the selection of the right peroxides and bleaching processes.

He is familiar with bleaching problems, knows the importance of holding down production costs. He offers you the benefits of his own personal experience backed by the knowledge of a group of trained specialists—research men and engineers—who have been working with peroxides and peroxide bleaching problems for years.

He brings into your plant up-to-the-minute facts from modern laboratory research plus the useful experience which du Pont has acquired in almost 50 years of service to the textile processing industry.

Visit the du Pont Wonder World of Chemistry Exhibits at the New York World's Fair and on the Boardwalk at Atlantic City

DU PONT
REG. U. S. PAT. OFF.

The R. & H. Chemicals Department
E. I. DU PONT DE NEMOURS & COMPANY (INC.)
Wilmington, Delaware

District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco

Certified Serviceability!

The Bemberg* "certified serviceability" plan, based upon fabric tests by United States Testing Company, was launched to assure consumer satisfaction with finished merchandise made of Bemberg rayon. Cooperation from the trade and the success of this plan has been most gratifying; complaints and returns have been reduced to a minimum. Retail organizations have found that "certified serviceability" is a stimulus to the sale of "Bemberg" merchandise as well as a source of increased profit. Honest, intelligent handling of the fabric serviceability problem inevitably benefits all concerned.

BEMBERG

*BEMBERG *is the registered trademark of* AMERICAN BEMBERG CORPORATION • Plant: Carter County, Tennessee

L. F. Dommerich & Company

Executive and General Offices

271 MADISON AVENUE
NEW YORK, N. Y.

Telephone: AShland 4-8650

FACTORS

For Manufacturers and Merchants

Inquiries as to our services solicited

●

ESTABLISHED 1840

They mean a lot to me

"As a stylist I am naturally interested in hosiery—style, fit, durability, color and quality of knitting. It is part of my business to know about such things. In buying stockings for myself, I pay particular attention to the knitting—because it is the basis of good style, fit and wearing qualities. I am sure that the serviceability of stockings depends to a great extent upon how smoothly and uniformly they are knitted."

Good needles are necessary in obtaining the best knitting results. For knitting is like a chain—it is as strong as its weakest stitch. Torrington Needles help to make each stitch even and uniform because they are made by special machine methods that assure extra uniformity in all the details that count—finish, temper, length, width, thickness. Let Torringtons help you get better knitting results.

TORRINGTON RENEEDLES YOUR BARS WITH SCIENTIFIC PRECISION

WASHING in a special solution removes all grease and dirt from your needle bars, sinker heads, knocking over bars and jack heads before work is begun on them.

LOADING is done with great care by experienced men. Clamps are replaced and tightened with equal pressure. A special indicator assures equal alignment of needles one end of the bar to another.

CHECKING for correct needle alignment, height of beard and centering in the groove is done by gauge for absolute uniformity. Needles are also spaced by gauge—not by eye. Final checking repeats every check made by straighteners.

TORRINGTON

Needles and Sinkers

THINGS TO LOOK FOR WHEN YOU BUY MACHINES —
NUMBER OF OLD MACHINES X LOW SPEED = PRODUCTION CAPACITY
SAME NUMBER OF NEW MACHINES X HIGH SPEED = PRODUCTION CAPACITY

WHEN YOU replace your old machines, you want faster speeds that will give you *more* production capacity with the *same* number of machines. And you can get machines that run at higher speeds by insisting on Torrington Needle Bearings.

Made by the makers of Torrington Needles, these unusual anti-friction bearings give you plenty of other advantages in addition to higher speeds. They enable you to reduce your operating costs and still increase your output. Their anti-friction construction cuts down on power losses — puts the power into useful production instead.

This is one of the many savings you can effect with Torrington Needle Bearings. They need less maintenance attention, because they are designed to run for long periods without renewal of lubricant. The hardened retaining race forms a reservoir that holds a large quantity of grease or oil to keep the bearing thoroughly lubricated. The turned-in lips of the race fit closely to the shaft to keep out dust and lint. And the entire bearing is designed for long life in severe service.

If you want all these features in your new machines, ask to have them equipped with Torrington Needle Bearings. And ask the Torrington Engineering Department about the possibility of installing Needle Bearings on your present equipment — it is often easy to make the change.

For full information on the Torrington Needle Bearing, write for Catalog No. 12. For Needle Bearings to be used in heavier service, write our associate, Bantam Bearings Corporation, South Bend, Indiana, and ask for Bulletin 103X.

The Torrington Company
ESTABLISHED 1866
Torrington, Conn., U.S.A.
Makers of Needle and Ball Bearings
New York Boston Philadelphia Detroit Cleveland Chicago London, England

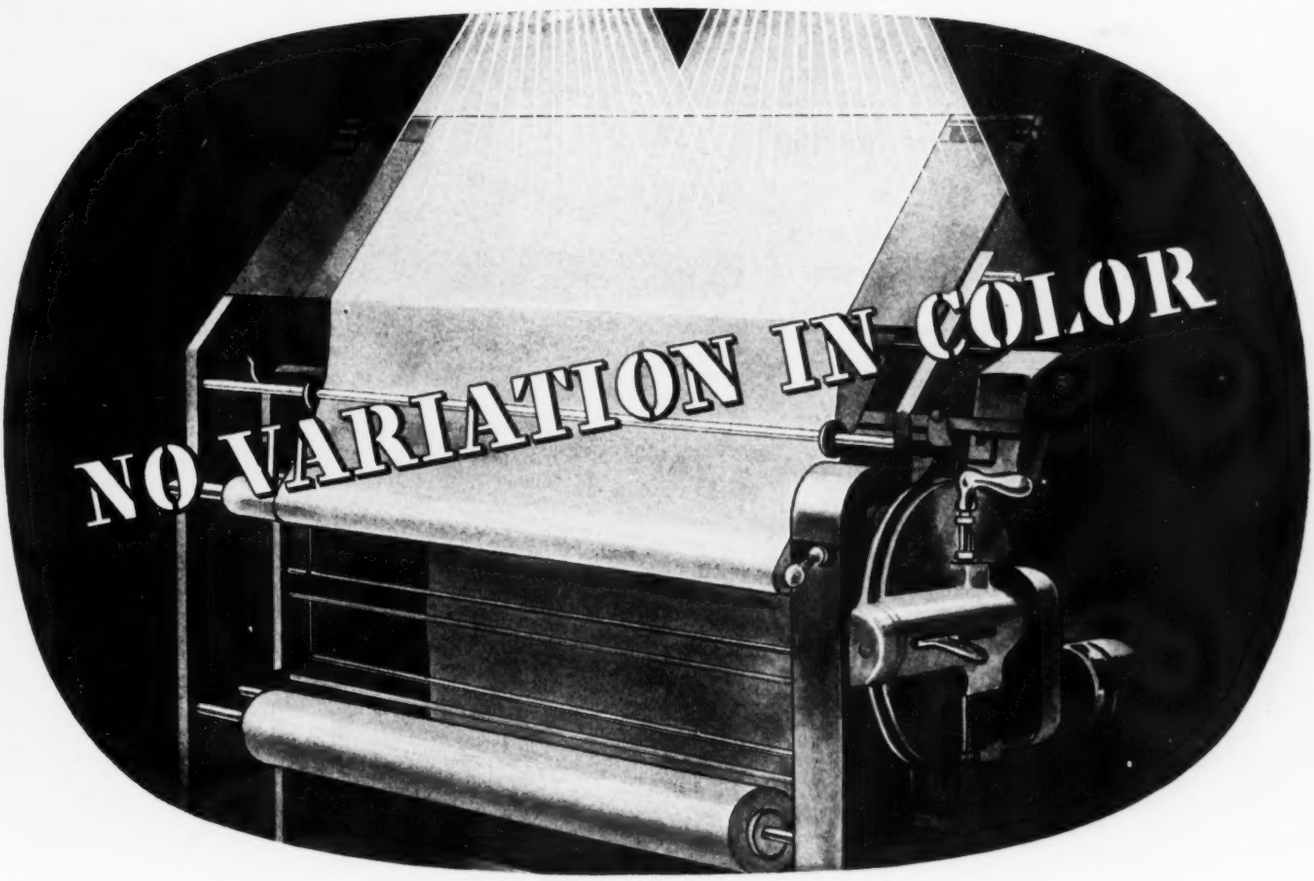
TORRINGTON
NEEDLE BEARING

CLOTH WOVEN FROM THE NEW *"Continuous Process"*

*Spun-lo Rayon

*Reg. U. S. Pat. Off.

DYES MORE EVENLY • MORE UNIFORMLY



Weavers quickly discovered the superiority of the new Spun-lo made by Industrial's revolutionary "continuous process". But it remained for the converters and cutters to report on its dyeing properties. Here's their finding: "unexampled evenness in color and an amazing absence of streaks and filling bands even in flat goods in the difficult dark tones."

Now, that's been their experience. Naturally, you want to know why this should be.

To describe so complicated a process in a few words is difficult, but the sum of it is that Industrial's new yarn is spun, bleached, dried, treated and twisted continuously as a single thread, without once being touched by human hand.

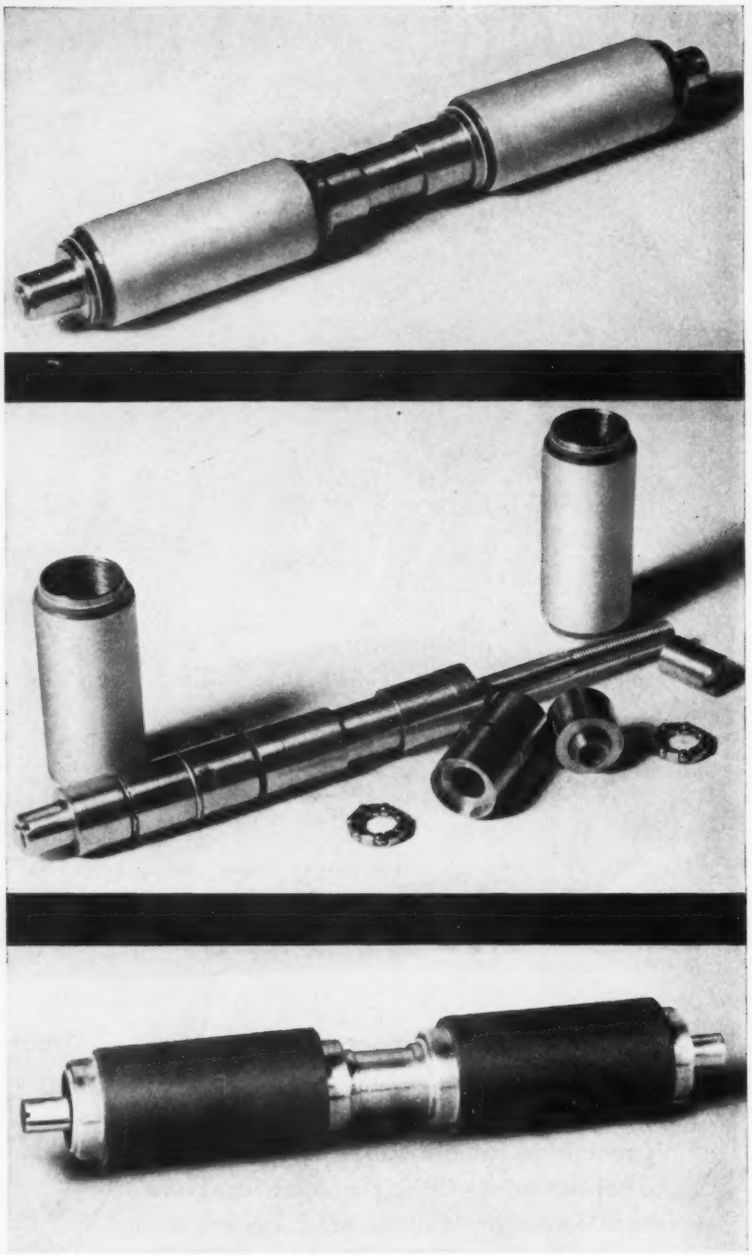
The resulting uniformity of the yarn makes the amazing difference in dyeing.

INDUSTRIAL RAYON CORPORATION • CLEVELAND, OHIO

NEW YORK OFFICE • 500 FIFTH AVENUE

At last

A TRULY LINT-PROOF LOOSE BOSS TOP ROLL FOR SPINNING AND ROVING FRAMES



An original type of shell roll that is superior to anything heretofore available for textile machines.

The arbor is formed from a single piece of hardened steel designed to give equal weight distribution, with ball races correctly spaced for best load-carrying qualities.

Shells are securely locked in position during operation, but are easily removed for buffing or covering.

Long life lubrication eliminates daily oiling nuisance.

No grease or oil stains on your yarns.

The entire assembly is effectively sealed against lint and dirt.

Specify the NEW Whitin Ball Bearing Shell Top Roll on all new Spinning and Roving Frames, or when replacing your present equipment.

WHITIN MACHINE WORKS

WHITINSVILLE, MASSACHUSETTS, U. S. A.

CHARLOTTE, N. C. ATLANTA, GA.

The North American Rayon "Key to Quality" symbol

To distinguish

North American rayon merchandise especially selected because of fabric excellence and style appeal, this tag is attached to outstanding ready-to-wear.

And to control

quality, fabrics are carefully tested* for manufacturers using the North American certified testing plan.

Merchandise which meets approved standards of construction, cleanability and color fastness is permitted to carry this North American "certified" tag.

**The United States Testing Company is the testing Institute for the North American quality control plan.*

NORTH AMERICAN RAYON CORPORATION

261 FIFTH AVENUE
NEW YORK

PLANT—CARTER COUNTY
TENNESSEE

STANDARD *Durene* SELLS MORE

...Shirts

...Shorts

...and Sox

STANDARD *Durene*
COMBED SAKS
Selo
PREEMO
THREADS
COMBED PEELERS

THE figures are in. The facts are plain. Standard Durene's double absorption, quicker evaporation, smooth-running yardage and superior mercerization have increased many manufacturers' sales and profits.

Specify Standard Durene and assure your share of extra sales. Standard Durene's 63-year quality ideals and rigid S-C-T Processing Tests make Standard Durene practical and profitable for manufacturers of knit and woven goods.

SPINNERS MERCERIZERS S-C-T DYERS BLEACHERS

STANDARD-COOSA-THATCHER CO.

ESTABLISHED 1877
CHATTANOOGA, TENNESSEE
Sales Offices: 804-6 Lafayette Building, Philadelphia, Pa.

NEW YORK, N. Y.	CHICAGO, ILL.	GREENSBORO, N. C.	READING, PA.
185 Madison Ave.	940 Merchandise Mart	Guilford Bldg.	Reading 6262

TUFFERIZED Card Clothing

U. S. PATENT NO. 2,174,173

Goes Over the Top

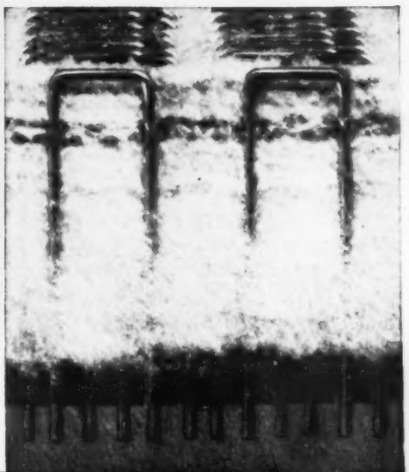
Amazing improvements, precision uniformity, and patented-process, produce new high peaks in quality as well as customer satisfaction. Tufferized Card Clothing has wires projecting to exactly the same length, and points lying in the same plane. When mounted on your cylinders there is no change or variation of position and you can set your rolls to closer limits.

Write for additional information or ask our representative

HOWARD BROS. MFG. CO.

HOME OFFICE AND FACTORY: WORCESTER, MASS.

Southern Plants: Atlanta, Ga., Gastonia, N. C. *Branch Offices:* Philadelphia, Dallas
Canadian Agents: Colwool Accessories, Ltd., Toronto 2, Canada

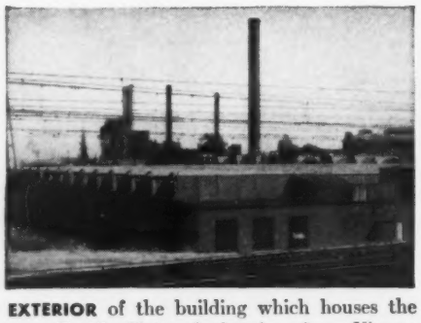


Microphotograph shows how Tufferized Card Clothing wires seat square, flat, and firmly into the foundation with wires parallel . . even in length . . spaced uniformly

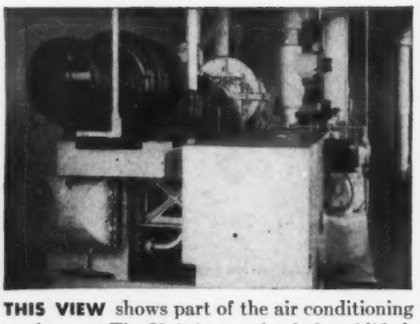
Products: Card Clothing for Woolen, Worsted, Cotton, Asbestos, and Silk Cards — Napper Clothing, Brush Clothing, Strickles, Emery Fillets, Top Flats Recovered and extra sets loaned at all plants — Lickerins and Garnett Cylinders from 4 to 30 inches and Metallic Card Breasts Rewired at Southern Plant — Midgley Patented Hand Stripping Cards, Howard's Special Hand Stripping Cards and Inserted-Eye and Regular Wire Heddles

CROW'S NEST!

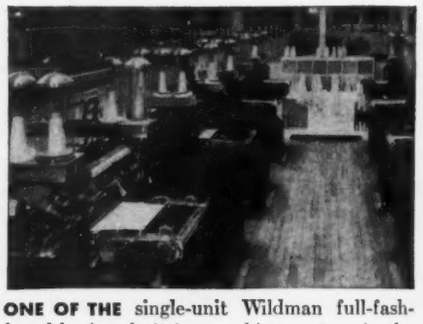
...with 60,000 square feet of floor space



EXTERIOR of the building which houses the new Textile Unit of the American Viscose Corporation.



THIS VIEW shows part of the air conditioning equipment. The Unit is completely humidified.



ONE OF THE single-unit Wildman full-fashioned hosiery knitting machines, set up in the Textile Unit.

IN THE TEXTILE UNIT are the most modern types of mill machinery—such as this 1000-end Sipp Eastwood magazine creel.

PHOTOGRAPH of a Whitin super-draft slubber running on Fibro. Exact conditions of the average mill operation are closely approximated.

A SEVEN-CAN high speed Johnson slasher in use in the American Viscose Corporation's new Textile Unit.

Any businessman today—and especially the mill owner—is almost ceaselessly engaged in coping with the problems immediately surrounding him.

Like the captain of a ship, he is too busy at the helm to run up to the crow's nest and take a look around the horizon. He must depend on someone else to do that for him.

Following its policy of pioneering in the rayon industry, the American Viscose Corporation takes this occasion to announce the establishment of just such a "crow's nest"... a new Textile Unit, now in operation at Marcus Hook, Pa., in connection with our plants and laboratories there.

In this Textile Unit, self-contained in its own building and comprising 60,000 square feet of floor space, all mill conditions common to the manufacture of rayon products *are closely approximated*. Day after day, in actual working conditions, problems which arise to confront you, arise here. And as soon as they arise, the vast resources of the American Viscose Corporation are mobilized to find a way to solve them . . . to find the cheapest and most efficacious way to overcome them . . . to find a way which *you* can make use of in your own mill.

Not only is this Textile Unit concerned with the solution of everyday problems—it is also concerned with discovery, with the finding of new and better ways of doing things, with the uncovering of new avenues for profit for the whole industry.

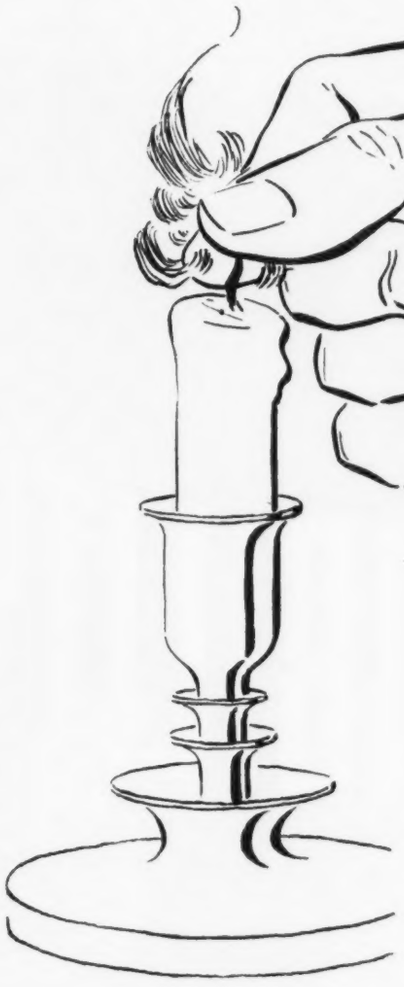
The Unit is at present engaged in activities relating to the development of new fabrics, the solution of many dyeing and finishing problems, and the maintenance of quality in construction.

We hope you will consider this a cordial invitation to see and inspect this "crow's nest" of the rayon industry.

Copr. 1940 American Viscose Corp.

AMERICAN VISCOSE CORPORATION *Lustre-Fibres, Ltd.,* SELLING AGENTS • *350 Fifth Avenue, New York City*
THE WORLD'S LARGEST PRODUCER OF RAYON YARN

THE FIRST NAME IN RAYON . . . THE FIRST IN TESTED QUALITY



Finger-Tip CONTROL

. . . but scotching a fire that starts in a remote corner of your plant is a flame of another character. IRM fire-prevention engineers can point out ways to make your business, industrial, or residential buildings less likely to be lost by fire.

This service costs you nothing, and, if an IRM inspection of your plant proves you to be a qualified risk, or shows you how to become one, you may have added benefits in store for you. Sound risks are the only kind that are eligible for IRM insurance; but that kind of foresight reduces the number of fire losses and has enabled IRM to return 25% of the annual premiums to policyholders every year since the IRM group was organized.

Noted for its outstanding fire-prevention efforts and for its prompt, businesslike settlements whenever fire does occur, IRM offers *sound indemnity at minimum cost.*

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IMPROVED RISK MUTUALS · IRM · NEW YORK, N.Y.

A nation-wide organization of old established, standard reserve companies writing the following types of insurance: Fire • Sprinkler Leakage • Use and Occupancy • Tornado and Windstorm • Earthquake • Rents • Commissions and Profits • Riot and Civil Commotion • Inland Marine

RESPONSIBILITY

BOSTON WOVEN HOSE

IT PAYS TO BUY BY NAME!

A product that fails to deliver what the manufacturer promises, and what the buyer has a right to expect, is a loss to both — the buyer and the seller . . . Years ago buyers tried to judge the value of rubber hose and belting by tearing the plies apart to "test the friction" . . . Today, the keen buyer chooses his source of supply intelligently and places full responsibility on the manufacturer. And that is exactly where it belongs . . . Buying Mechanical Rubber Goods on the basis of a hand test is sheer gambling. The product may have many weaknesses which remain hidden until after installation . . . B.W.H. products are "built with honor" with a knowledge of sixty-one years progressive experience behind each and every brand.

WORKS:
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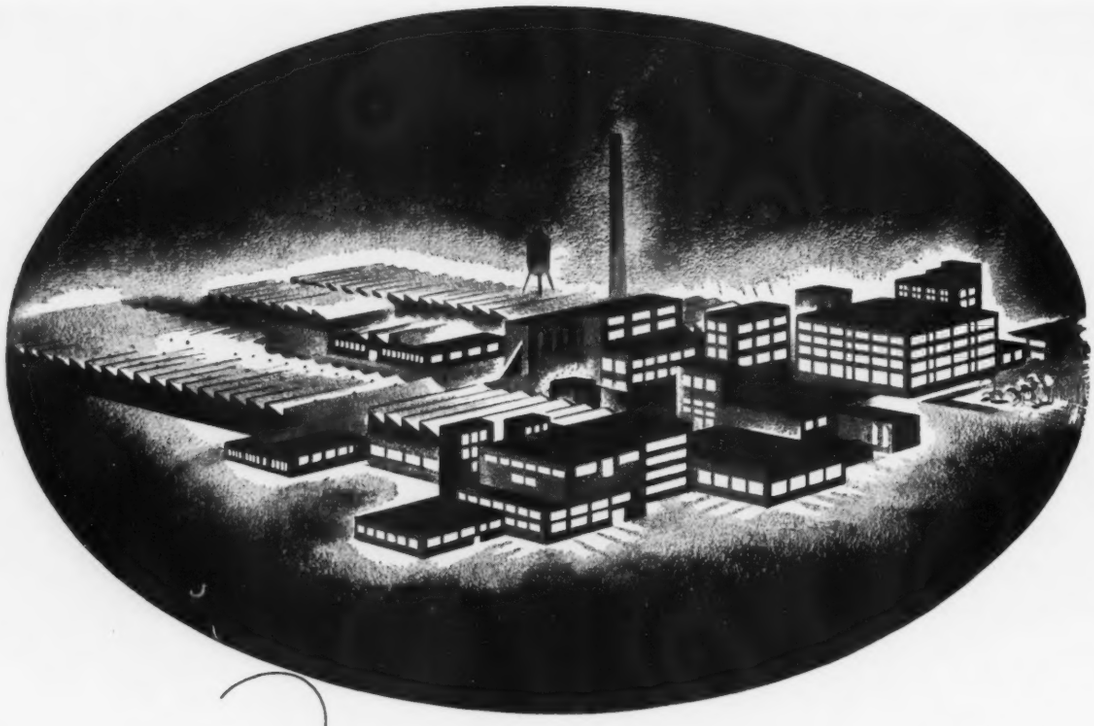
E & RUBBER COMPANY



when the Tubize whistle BLOWS

TUBIZE MOVES ON! Over the years, it has grown and prospered... thanks to good Rayon, thanks to close service, thanks to *you*. Your belief, your confidence, your patronage...our sense of responsibility to you...have built Tubize today. And those same basic elements will build Tubize tomorrow.

For no one in Rayon stands still. If they do—they're no longer in Rayon! One of the fastest-moving industries in America today, Rayon has *zoomed* like a shooting star. Yet its present development is incomplete...still rocketing on! Tubize contributions to Rayon have been numerous...in terms such as abraded yarn, delusterization, knitting integration to raise and maintain the standard of cloth from our own yarn, Quality Control. They will be equally significant tomorrow—for Tubize moves on with Rayon.

The Challenge of Tomorrow is in our ears ...the promise of tomorrow is in our hands... every time the Tubize whistle blows!

The Makers of Chardonize Rayon

TUBIZE CHATILLON CORP.

TWO PARK AVENUE, NEW YORK CITY

VISCOSE AND ACETATE RAYON YARNS AND FABRICS

WE'RE IN THE ARMY NOW..

JACQUES WOLF DYES MEET GOVERNMENT REQUIREMENTS FOR SERVICE FABRICS

ARMY uniforms have to be able to "take it"—in all kinds of weather. Be sure *your* service fabrics can stand their color tests. Use these Jacques Wolf Alizarine yellows. They meet all U. S. Government specifications for fastness to light, salt water, fulling and carbonizing.

ALIZARINE YELLOW R gives deep (chrome-orange) yellow.

ALIZARINE YELLOW GN gives bright (lemon) yellow.

Also used in Printing, for colors of extreme smoothness and depth of shade.

Alizarine yellows are already famous among the list of well-known Jacques Wolf specialties. Write for further information on their characteristics and use. Our complete research laboratory is at your disposal.

FOR MORDANTING

Use Jacques Wolf ACETATE OF CHROME to give fibres *extra affinity* for dyestuffs.

WOLF BRAND PRODUCTS

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WAREHOUSES: Providence, R. I., Philadelphia, Pa., Utica, N. Y., Chicago, Ill., Greenville, S. C., Chattanooga, Tenn. Midwestern Distributor: Bradley F. Marthens, Milwaukee, Wisc.

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BENZOFORMS

DISCHARGEABLE
DYESTUFFS
FOR WASHABLE
FABRICS AND
PRINT GROUNDS

BENZOFORMS

are a complete color range of dyestuffs for after-treatment with formaldehyde. They are dischargeable and have better tnan average fastness to washing. Benzoforms are suitable for the dyeing of rayon and cotton in all stages of manufacture and in all types of machines. The method of application is simple and inexpensive. For quality and economy use BENZOFORMS.

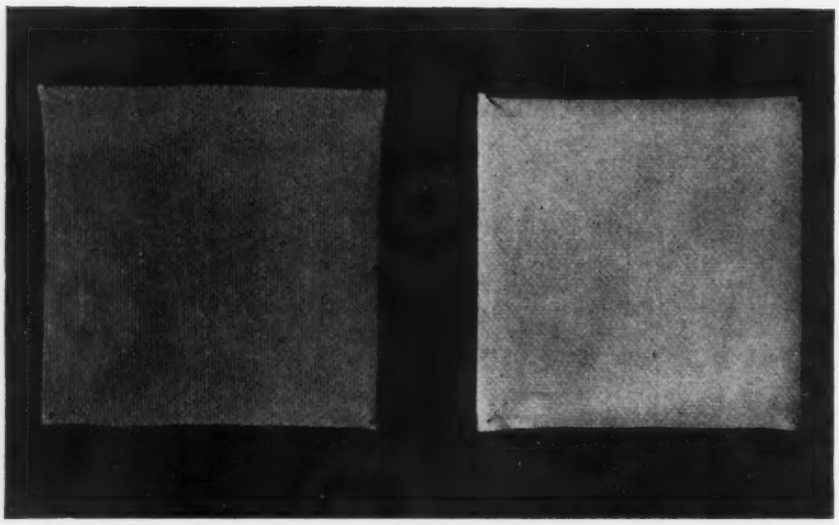
GENERAL DYESTUFF CORPORATION

FOUR THIRTY-FIVE HUDSON STREET · NEW YORK CITY

BOSTON · PROVIDENCE · PHILADELPHIA · CHICAGO · CHARLOTTE · SAN FRANCISCO

DU PONT Tetra Sodium Pyrophosphate

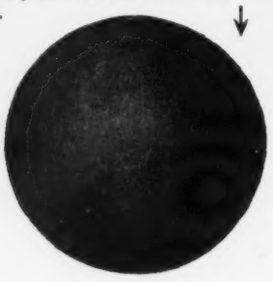
Prevents the Formation of Insoluble Soap



A soiled piece of toweling was cut into two swatches. The swatch on the left was washed ten times in warm water containing 300 parts per million hardness with sufficient soap to cause sudsing. The swatch on the right was treated in like manner except that the wash water used each time contained 0.1% Tetra Sodium Pyrophosphate. The gray, drab shade of the cloth on the left is apparent.

The photomicrograph shows the sticky precipitate formed when soap is added to water containing calcium and magnesium salts. Notice how the particles have gathered together into flocks and chains.

The photomicrograph shows the fine particles formed by soap in the same water, to which 0.1% Tetra Sodium Pyrophosphate was first added. These particles are so small that they drift readily in the convection currents within the drop.



IN THE process of washing, dirt and grease are removed from the fine threads of the fabric. The dirt particles are still in the washing solution. When insoluble hard water soap particles are formed during the washing, the fine dirt particles adhere to the soap and are redeposited on the fabric (one cause of gray, drab washing). Therefore, the formation of insoluble hard water soap particles must be prevented.

The action of DU PONT Tetra Sodium Pyrophosphate in preventing the formation of insoluble soap precipitates is two-fold. First, it has a definite capacity to solubilize hard water salts, especially magnesia, and in this way removes one of the components which cause precipitation of hard water soaps. Secondly, it forms a type of precipitate which is very fine and remains suspended throughout the solution passing through the meshes of the fabric without being deposited.

The advantage of preventing the formation of hard water soap, together with its definite action as an emulsifier and suspending agent, make DU PONT T. S. P. P. a desirable addition to washing compounds.

OTHER CHEMICALS

Formic Acid
Acetic Acid
Glauber's Salt
Sulfuric Acid
Muriatic Acid
Sodium Sulfide
Sodium Sulfate
Sodium Bichromate
Lactic Acid

DUPONT

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
GRASSELLI CHEMICALS DEPARTMENT
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New TOLHURST SUPREX

REDUCES EXTRACTION TIME 67%

EXTRACTION TIME

4.2 MINUTES

SUPREX

12.4 MINUTES

STANDARD EXTRACTOR

ACTUAL comparison tests made under identical conditions on a cotton textile showed the following results: TOLHURST SUPREX required only 4.2 minutes to obtain 40% moisture retention. A standard type extractor required 12.4 minutes to obtain the same result. Hourly production of the SUPREX was 1370 lbs. against 730 lbs. for the standard type. Allowing 4 minutes for loading and unloading in each case the complete operating cycles were 8.2 minutes for the SUPREX and 16.4 minutes for the standard type extractor. Proportionate savings can be effected on other textiles.

Let us prove these claims through actual performance on your materials. Decide now to put this same high-speed extraction to work in your plant. Simply fill in the handy coupon below to get complete information. Mail it today!

TOLHURST CENTRIFUGAL DIVISION

American Machine and Metals, Inc. EAST MOLINE, ILLINOIS

Only

TOLHURST SUPREX OFFERS ALL THESE ADVANTAGES

1. Increased Production
2. Lower Moisture Content
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4. Power Savings
5. Greater Cleanliness

TOLHURST CENTRIFUGALS

TOLHURST CENTRIFUGAL DIVISION Established 1852

Yes! TOLHURST CENTRIFUGAL DIVISION
204 Tolhurst Street, East Moline, Ill.
I want to know how TOLHURST SUPREX reduces extraction time as much as 67%. Send details!

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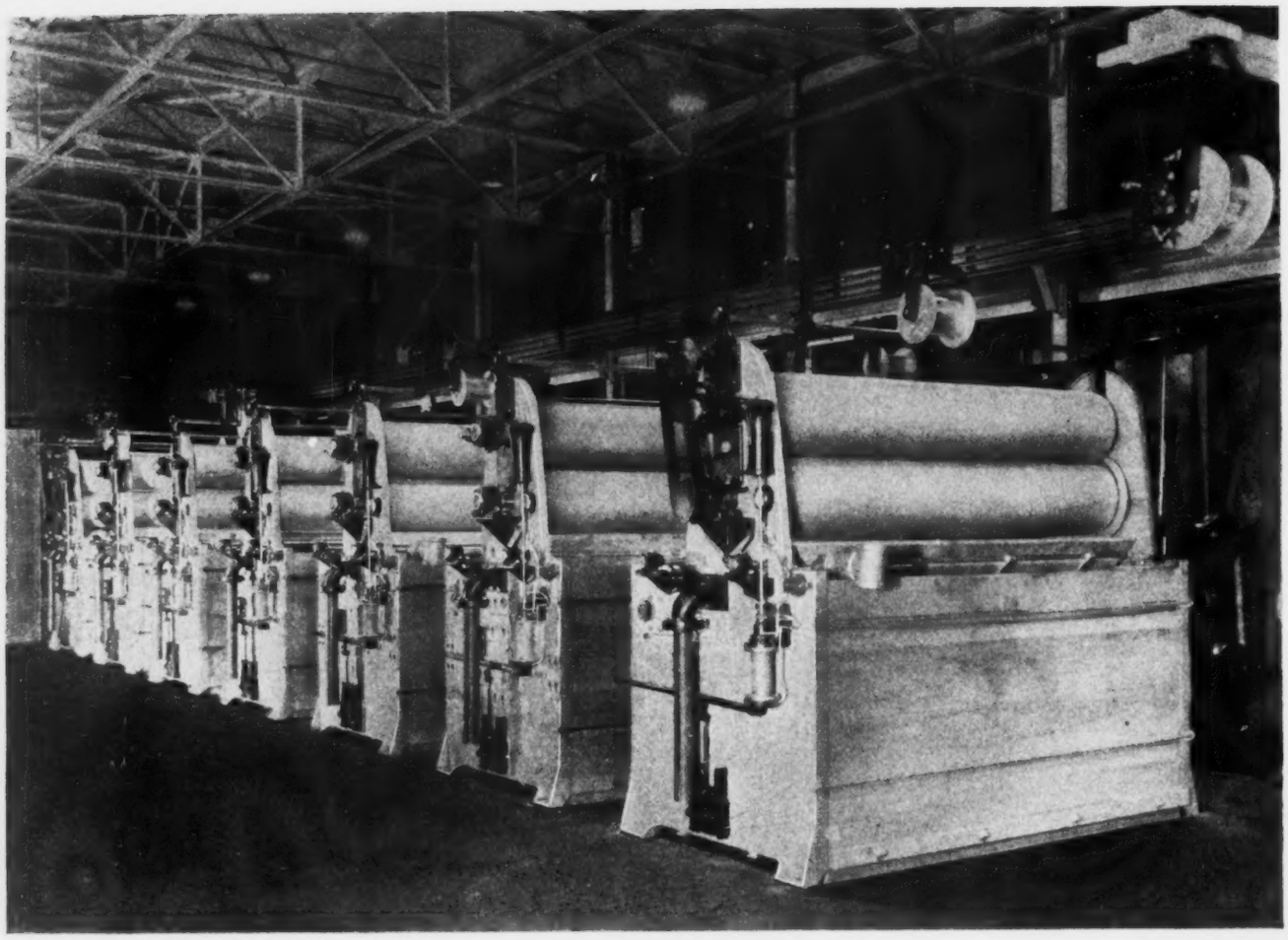

HOW TO SCOUR CLOTH *continuously*

AT 27 TO 40 YARDS PER MINUTE

Installed in one of the largest woolen mills in America, the new Hunter Continuous Washer is scouring diversified fabrics, from blankets to automotives, at speeds ranging from 27 to 40 yards per minute and with a marked economy in use of water and soap.

This new Hunter unit differs from all other known continuous washers in a very important respect. It is this. It may be used either as a continuous range or as 7 or less individual cloth washers which may be used all at one time with 7 different loads, or as few or as many bowls as may be required.

This new unit is relatively low cost in initial expense and is inexpensive to operate. It comes complete with all necessary motors, variable speeds, hydraulic or pneumatic tension for nip rolls, etc. For complete details write to James Hunter Machine Company.

JAMES HUNTER MACHINE CO. Hunter NORTH ADAMS MASS.

JAMES HUNTER MACHINE COMPANY

FOUNDED 1847 NORTH ADAMS, MASSACHUSETTS

Southern Representatives
CAROLINA SPECIALTY COMPANY
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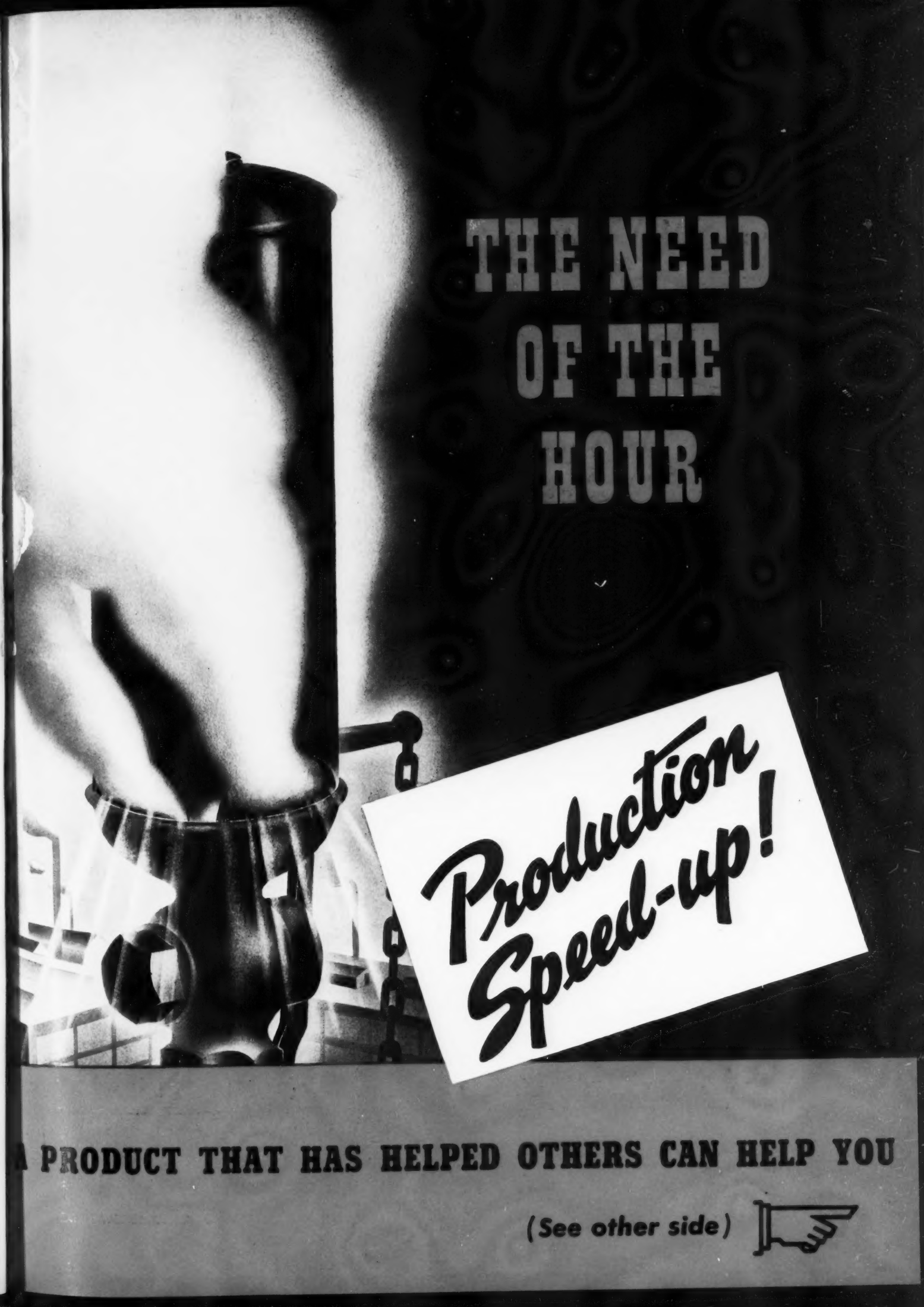
Los Angeles, California


THE NEED
OF THE
HOUR
Production
Speed-up!
A PRODUCT THAT HAS HELPED OTHERS CAN HELP YOU
(See other side)

IN SPINNING

...bolster wear, spindle drag, and thread breakage greatly reduced by TYCOL SPINDLE OIL...

Several higher priced spindle oils had been tried, but when this Plant Superintendent of a famous thread company switched to TYCOL SPINDLE OIL he obtained the best results. He has been able to reduce bolster losses and has eliminated spindle drag and thread breakage. Operating costs have been cut in half. Naturally he is highly satisfied with TYCOL SPINDLE OIL. » » »

Many other Textile Mill Operators have found that when they switched to Tycol oils their operating cost dropped and their production increased. There are two good reasons why such worthwhile results are obtained with Tycol Oils and Greases. First: quality lubricants. Second: the right lubricant applied in the right way. A Tide Water representative will be glad to introduce you to Tide Water's complete line of oils and greases "engineered to fit the job." This service is freely offered. Write.

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INDUSTRIAL TYCOL OILS-GREASES

TIDE WATER TEXTILE LUBRICANTS

THERE IS A COMPLETE LINE OF TYCOL LUBRICANTS SCIENTIFICALLY ENGINEERED FOR EVERY INDUSTRIAL USE

"WE'LL ONLY NEED ONE COAT WITH THIS NEW DULUX REG. U. S. PAT. OFF. HIGH-HIDING MILL WHITE!"

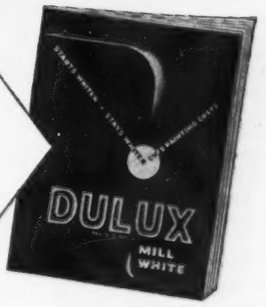
THE greatly stepped-up hiding power of the new DULUX High-Hiding Mill White is setting a sensational money-saving pace! Plant operators find many painting jobs can now be done with one coat instead of the usual two. Except when the present finish is in very poor condition, just one coat of DULUX High-Hiding Mill White will do the job you want.

DULUX saves you time and money with its "ONE COAT" advantage. You need fewer gallons . . . application time and costs are less... and your machinery lies idle for a shorter time.

Intensely white at the start, DULUX High-Hiding Mill White retains its brilliant whiteness far longer than most paints. And that means economy in the long run, because of *fewer* repaintings.

If you would like to know more about this amazing new Mill White, just write to E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington, Del.

SEND FOR THIS FREE BOOK



DU PONT
REG. U. S. PAT. OFF.

DULUX

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HIGH-HIDING MILL WHITE

E. I. du Pont de Nemours & Co. (Inc.), Dept. T-90
Finishes Division, Wilmington, Delaware

Please see that I get complete information about DULUX High-Hiding Mill White—and your new booklet.

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Address.....

City.....State.....

G-E Range

D-c Job

SIX-UNIT RANGE DRIVE

D-c Adjustable Voltage

1. Ten-hp, splashproof, ball-bearing d-c motor drives first unit—a caustic padder. Behind it is the 60-ft tenter, next unit of the range

2. Thirty-hp, splashproof, ball-bearing d-c motor drives 60-ft mercerizing tenter. This is the "lead" or pacemaking unit of the range

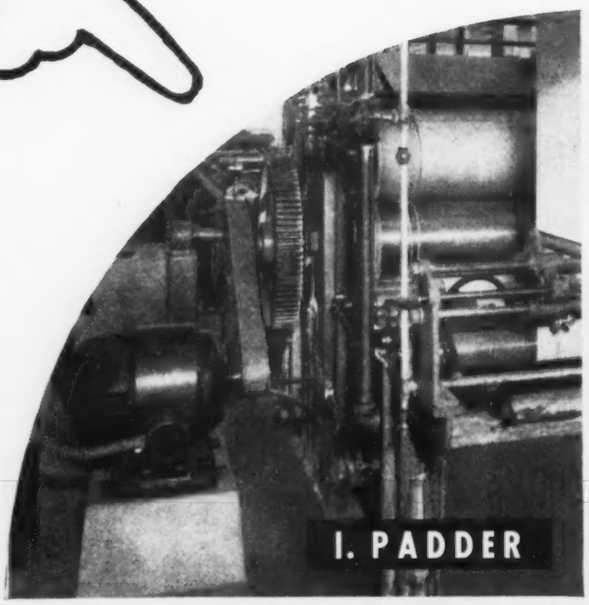
3. Five-hp, splashproof, ball-bearing d-c motor drives recuperator—third machine in the range and the third drive unit

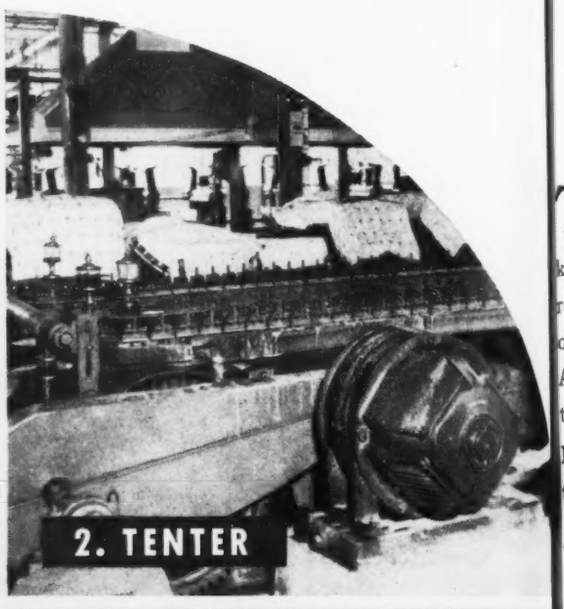
4. Three 3-hp, splashproof, ball-bearing d-c gear-motors driving three-compartment washer—fourth machine, and fourth, fifth and sixth drive units of the range

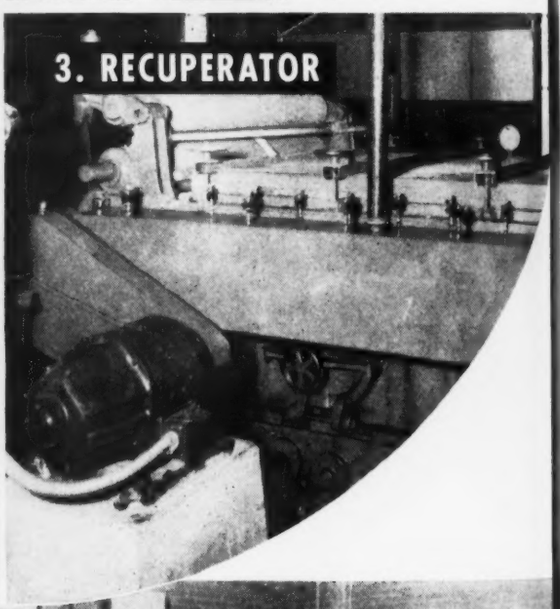
5. At this central master-control station is hand-operated rheostat for controlling speed of entire range, and, below it, push-button control for starting, jogging, stopping the range, or cutting out any one unit of the range

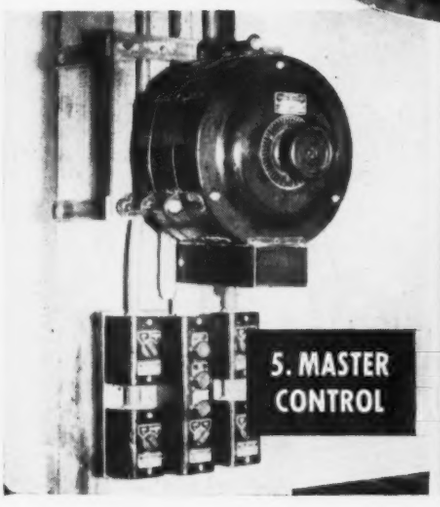
6. Two motor-generator sets, and operator's panels, to provide direct current to the range drives, the one here described and two others

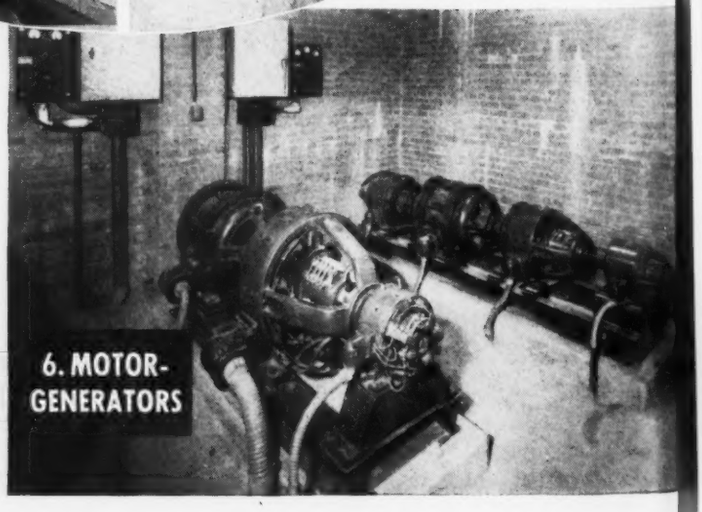
Erwin Cotton Mills, Cooleemee, N. C.











Drive Makes Hit at Erwin Mills

THE six electric-drive units of this d-c adjustable voltage (Ward Leonard) type mercerizing range keep proper speed relation over the entire operating range. That is, there is no undue stretching or tearing of cloth at the start or when shutting down the range. And speed can be increased or decreased throughout the entire range without stretch, sag, or tear.

Erwin Mills operators and management report that the drive has entirely fulfilled the requirements.

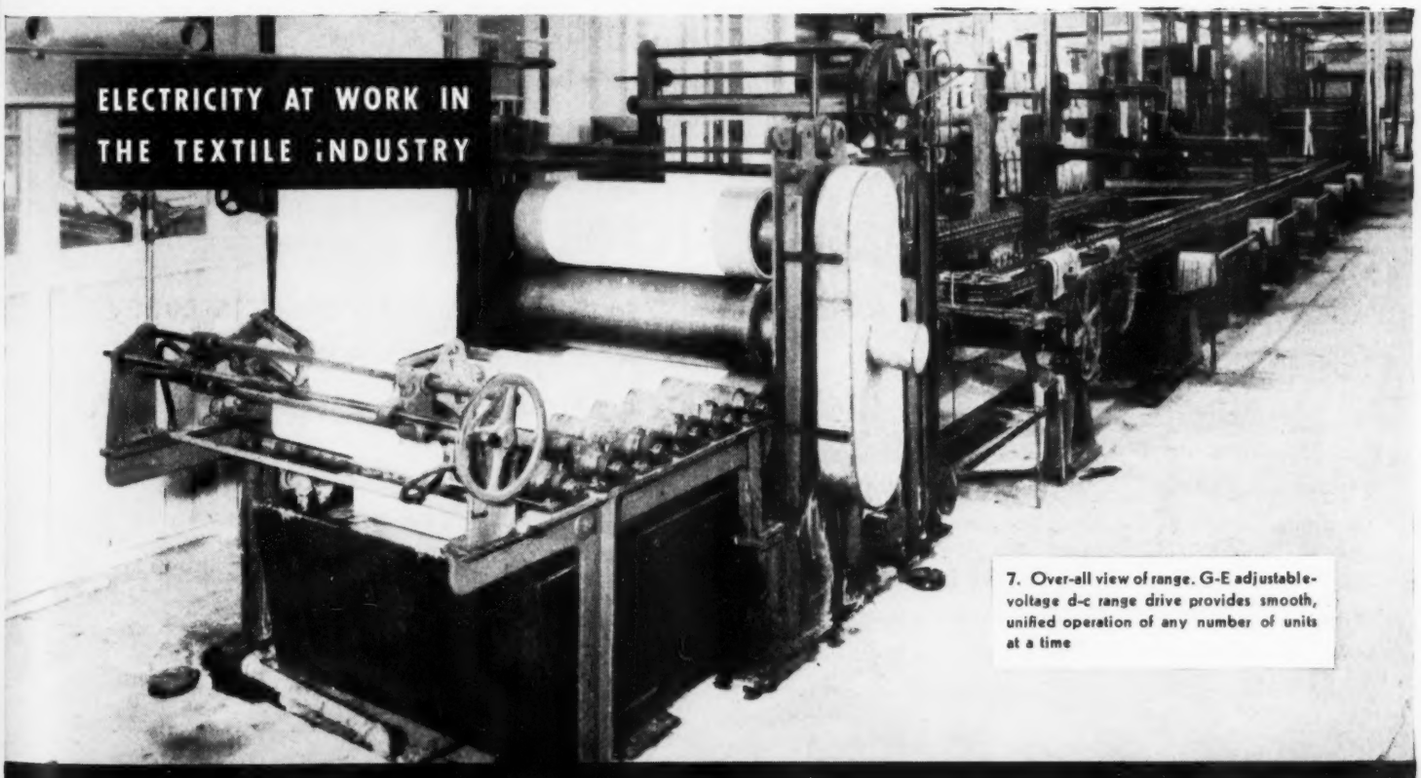
A HARMONIOUS SYSTEM

Motors, rheostats, starters, and motor-generators are of the latest General Electric design. They are electrically "tied together" in a harmonious system that is easy to operate and that assures good performance at each unit. Here are some additional features:

—*Individual units may be cut out* of the range if desired and the remaining units will continue to operate in perfect "step."

—*Low threading speed* is included in the speeds available.

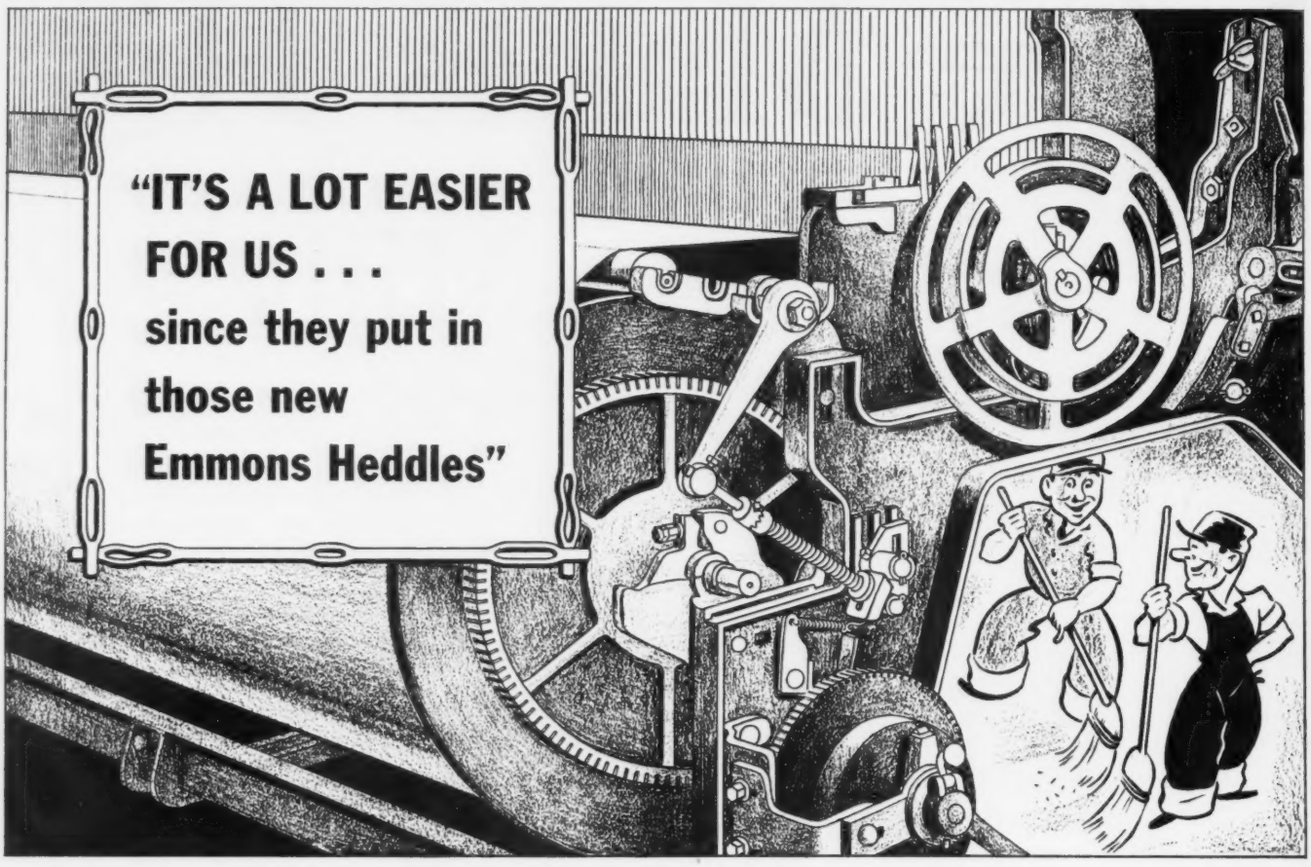
This is one of *four* kinds of range drive supplied by General Electric to the textile industry. For further information on range drives, describe the operating conditions to the nearest G-E office, or write General Electric, Schenectady, N. Y.



7. Over-all view of range. G-E adjustable-voltage d-c range drive provides smooth, unified operation of any number of units at a time

GENERAL ELECTRIC

661-4



Less fly with Emmons heddles? Sure! Just look at your floor after installing them. These streamlined, extra polished, corrosion-resistant, *wiry workers* reduce yarn wastage to a minimum.

Look for the "Certified" tag and the "Inspected And Approved" seal! They mean that two assistant P. A.'s are controlling *our* production *for your benefit* — the Pittsburgh Testing Laboratory, and our own inspection methods. Write us for complete details!

For rapid, economical service, get in touch with the Emmons representative in *your* locality. Quick delivery on . . . Chafeless Cord Cotton Harness . . . Multiple Yarn Space Reeds . . . Certified Steel Heddles . . . Heddle Frames, etc.

AND IT'S A LOT EASIER FOR YOU . . .

to buy Emmons Products today with these representatives . . . located at convenient points.

CLIFTON E. WATSON: Mgr. Southern Sales, Box 2036, Charlotte, *North Carolina*

HENRY E. LITTLEJOHN: Greenville, *S. Carolina*

ARTHUR W. HARRIS: Box 1982, Atlanta, *Georgia;* and representing Emmons in *Alabama, Louisiana, Mississippi*

WILLIAM L. BRALEY: Box 236, Itasca, *Texas,* also representing Emmons in *Oklahoma*

W. S. TAYLOR: 171 Madison Ave., New York City

★

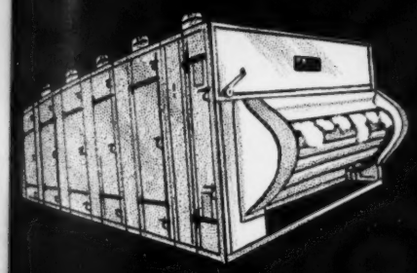
Emmons

EMMONS LOOM HARNESS COMPANY

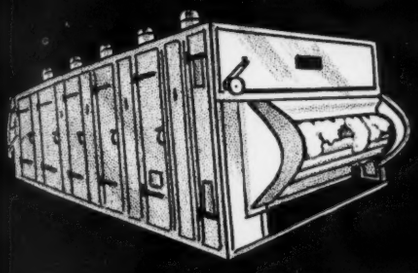
Lawrence, Massachusetts · · · Charlotte, N. C.

SEE LATEST TEXTILE WORLD YEARBOOK FOR DETAILS ON ALL EMMONS PRODUCTS

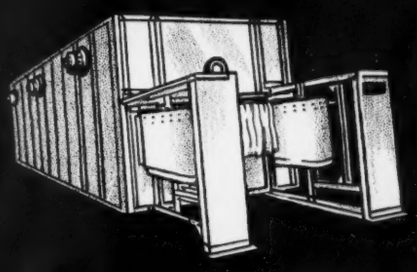
PROCTOR DRYERS *for* RAYON STAPLE



IN PLANTS PRODUCING RAYON STAPLE, 26 Proctor Dryers have been Installed to Date

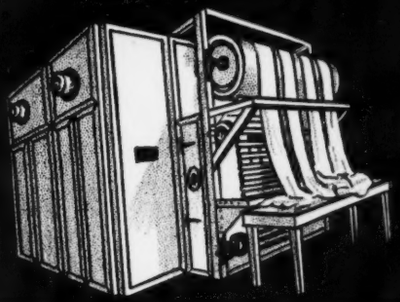


IN DYE HOUSES for Dyed Staple in Fibre Form, either All Staple or Blends



IN DYE HOUSES for Spun Rayon Yarn in Skeins After Dyeing or Processing

IN DYE HOUSES for Spun Rayon Yarn in Packages After Dyeing



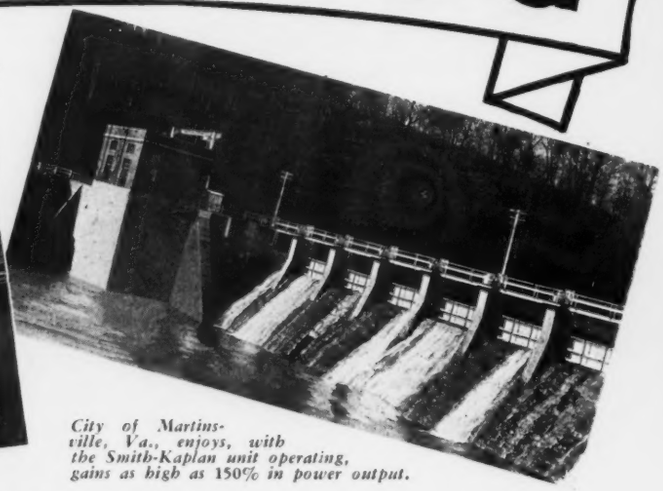
IN DYEING AND FINISHING PLANTS for Dyed Piece Goods of Spun Rayon and Blends

The super efficiency built into these new Proctor Dryers for rayon have made them the accepted standard for all who demand the lowest possible operating and maintenance costs and the highest quality results in their finished products.

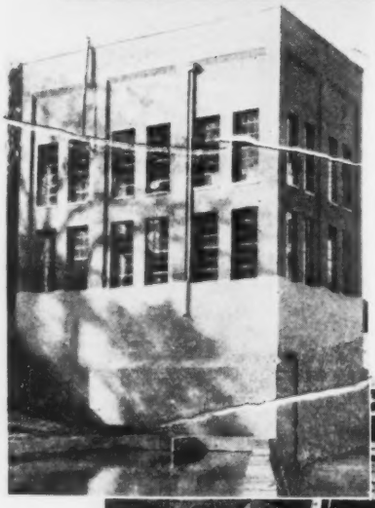
PROCTOR & SCHWARTZ · INC · PHILADELPHIA

modernized

Radford, Va., reports savings in fuel costs because of less use of Diesel standby equipment.



City of Martinsville, Va., enjoys, with the Smith-Kaplan unit operating, gains as high as 150% in power output.



Jackson Mills' North Carolina plant states generated power valued at thousands of dollars more than that obtainable with any other type of hydraulic turbine.

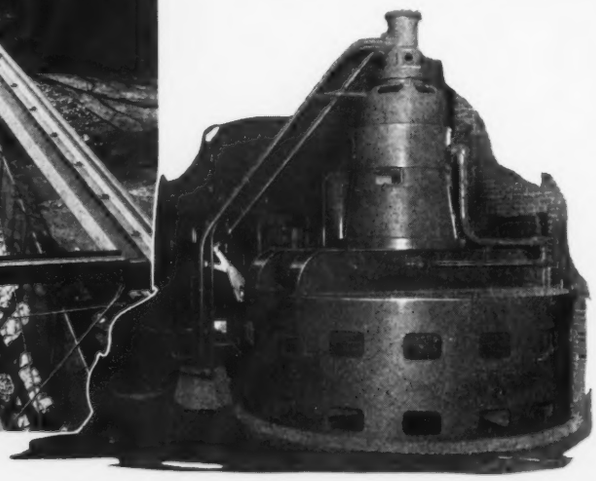
with SMITH-KAPLAN TURBINES

THESE *modernized* plants are striking examples of what is available, in the way of improved operating efficiency and lower power costs to water power users.

If you haven't considered the many advantages offered by, or are not familiar with the SMITH-KAPLAN Automatically Adjustable Blade Turbine, write to us. One of our engineers will be glad to assist you in reducing power costs and improving your service to customers, through adopting modern hydraulic turbine equipment. Write for data!

4000 Hp. Smith-Kaplan turbine, controlled from main station two miles away, assures maximum annual KW output, by maintaining high efficiency over wide range of load.

Smith-Kaplan 1000 KW Turbine produces maximum power per cu. ft. of water used at Millville, W. Va., plant of N. Va. Power Co.



S. MORGAN SMITH COMPANY YORK, PA.

The New Butterworth 80-ton 3-roll Hydraulic Calender for Rayons . . . Top and bottom rolls are chilled iron and steam heated. Middle roll is cotton. Top and bottom roll bearings have an oil circulating and cooling system. The new calender is driven by a 30 H. P. two-speed geared motor mounted on a gear reduction unit capable of standing loads or reducing speed instantly. Drives from reducer to top roll by roller chain. Other outstanding features are a new style balanced let off, moulded fibre 3-bar adjustable tension device, rolls mounted in heavy duty roller bearings, special slip belt winder with clutch, streamlined hydraulic pump fully enclosed, new style accumulator with safety switches, special valves for control of hydraulic equipment.

Calendering Rayon at 80 tons! . . . The new Butterworth 80-ton 3-roll Hydraulic Calender for rayons gives exactly the desired effect on finished fabrics at speeds of 40 to 80 yards per minute. There are no variations from lot to lot because pressures and temperatures are under precise, dependable control. Fabrics are always soft and mellow with the proper "hand" and "break".

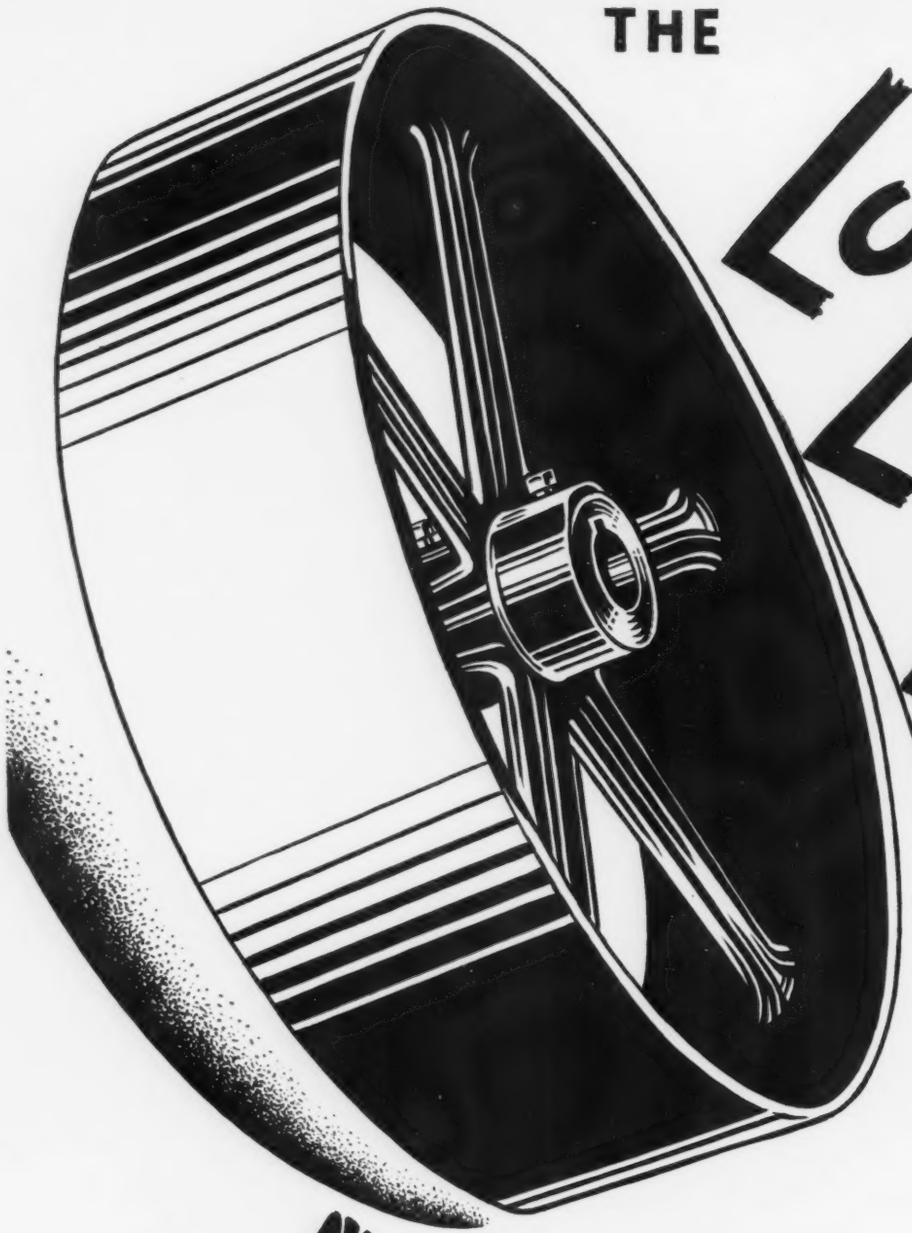
Let us send you full details.

Butterworth

Serving the Textile Industry Since 1820

H. W. BUTTERWORTH & SONS CO., PHILADELPHIA, PENNSYLVANIA : : Est. 1820. Plants at Philadelphia and Bethayres, Penna. : : Offices at Providence, Rhode Island and Charlotte, North Carolina : : In Canada—W. J. Westaway Co., Hamilton, Ontario.

THE Long Life Line



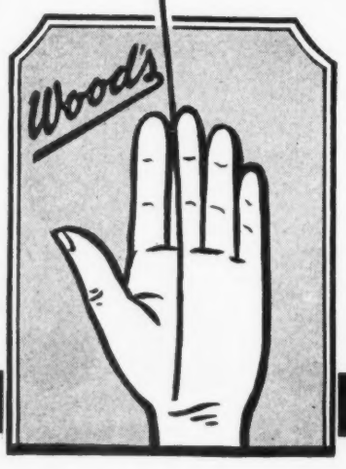
FORECASTS GENERATIONS OF MORE EFFICIENT PERFORMANCE

Wood's

CAST IRON PULLEYS

There can be no uncertainty in predicting the performance of Wood's Pulleys. For into every one is bred the fruits of more than 80 years of engineering experience reflected in sound design, calculated strength, true running and wobble-free characteristics.

You can install no finer pulleys, none more accurately balanced and power thrifty. Wood's Cast Iron Pulleys insure long-lived, trouble-free drive economy.

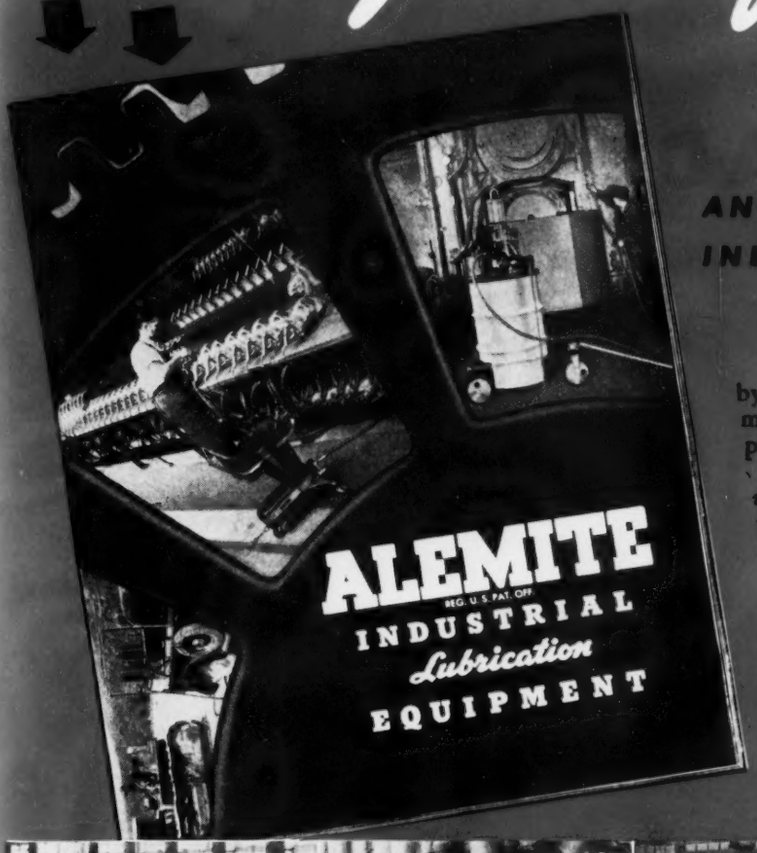


T. B. WOOD'S SONS COMPANY

CHAMBERSBURG, PENNA.

Branches at Boston, Mass., Pittsburgh, Pa., Newark, N. J.

This Big New Reference Book FREE!

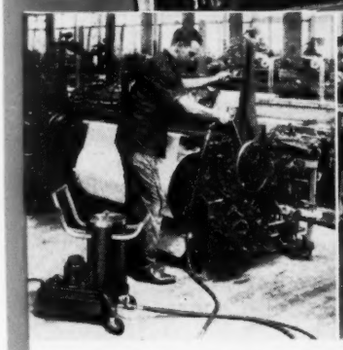


ANSWERS THOUSANDS OF INDUSTRIAL LUBRICATION QUESTIONS

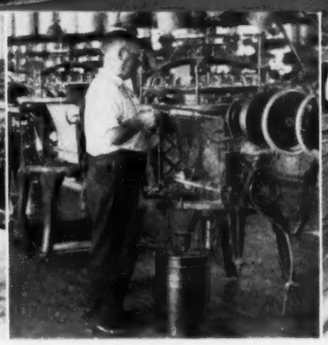
This book can save money for you—by helping you speed production, reduce maintenance costs, cut repair expense, lower product spoilage.

It brings you *the result of millions of dollars' worth of experiment and experience,* shows you how others in your own field of business have answered lubrication problems most economically.

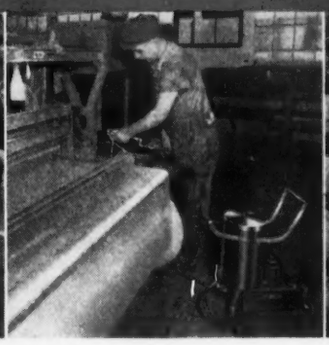
Alemite engineers are second to none in the efficient application of lubricants to machinery. This big FREE book describes the complete line of Alemite Lubrication Equipment. It belongs on the desk of every superintendent, shop foreman, and purchasing agent. Mail the coupon now for your copy.



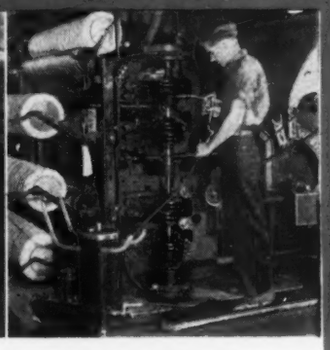
FOR LOOMS—*Alemite Power Guns save time, cut costs, insure a thorough, dependable lubrication job, lengthening machine life. The big new Alemite book shows the right Alemite Gun for your plant.*



ON THE KNITTING FLOOR—*Alemite Lubrication Equipment makes for cleanliness, economy, increased productive time. Let the big new Alemite book show you the complete line.*



IN RAYON MILLS—*"No bearing failures in twelve years," says this mill, "and Alemite Power Gun lubrication ended product spoilage by oil contamination." Read about it in the big new book.*



ON CARDING MACHINES—*"Alemite Power Guns added 12 machine-hours per week to our production schedule!" And they can help you effect savings in your mill! See the whole line in the big new book!*

ALEMITE
REG. U. S. PAT. OFF.
INDUSTRIAL LUBRICATION

ANOTHER STEWART-WARNER PRODUCT
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Rush my FREE copy of your new book, "ALEMITE INDUSTRIAL LUBRICATION EQUIPMENT."

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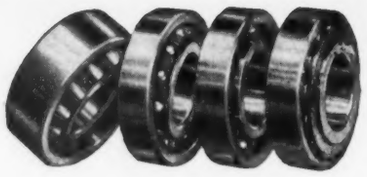
Ask Anyone in Industry!

The use of SKF



LEADS to PROFITS

on FLETCHER EXTRACTORS

BUILT BY FLETCHER WORKS

ONE THING leads to another in the good performance of SKF Bearings on this Fletcher Extractor. Smooth bearing performance leads to smooth machine performance, and smooth machine performance leads to PROFITS.

And the reasons for the good performance of the SKF Deep Groove Ball Bearings that carry the basket are rugged construction . . . initial close tolerances that are maintained indefinitely . . . and ability to take all combinations of radial and thrust loads.

Let SKF Bearings lead the way to PROFITS on your machines by consulting with your nearest SKF representative, or writing direct to

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SKF INDUSTRIES, INC., FRONT ST. & ERIE AVE., PHILA., PA.

SKF

BALL & ROLLER BEARINGS

It took much more than skilled labor, modern equipment and finest quality materials to make Dayco Tempered Roll Coverings the new standard of the industry. It took Dayton's 25 years' experience in technical research development, testing and production—it took more than a year's extensive use in leading textile mills, *and it took the cooperation of mill superintendents and technicians.* So here's orchids and a great big bow to the textile mill executives who helped make Dayco Roll Coverings the one standard of year-round efficiency by which all others must be judged.

These all-season Dayco Roll Coverings take temperature changes or extremes in stride without flattening—distortion or grooving. There are no ends down jitters and no production loss with Daycos. Daycos' unvarying properties assure instantaneous start-up and production after winter week-end shut-downs. Day in and day out, the overwhelming advantages of the all-season Daycos keep your efficiency up and your costs down.

THE DAYTON RUBBER MFG. CO.
TEXTILE PRODUCTS DIVISION. Dayton, Ohio
The Originators and Pioneers of Dayco Tempered Roll Coverings

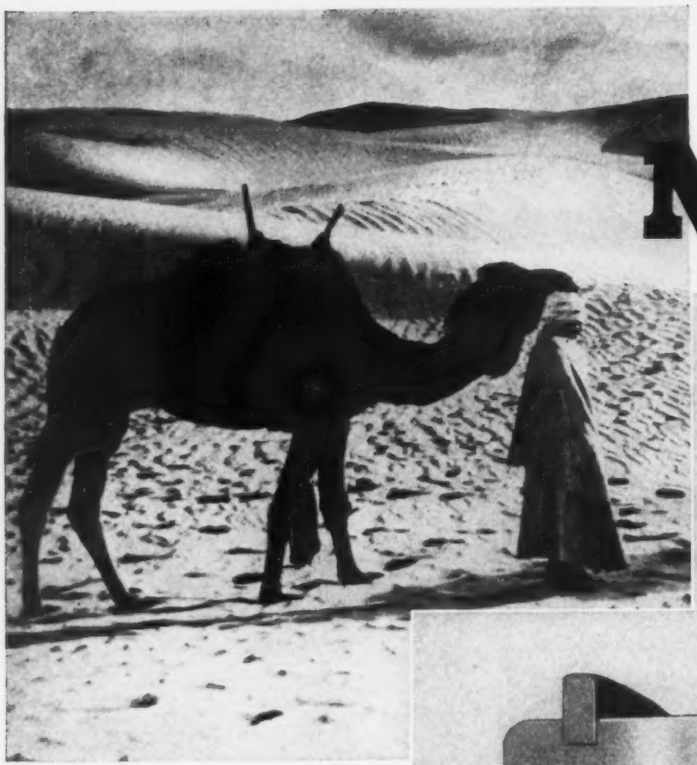
GREENVILLE SALES OFFICE
Woodside Building, Greenville, S. C.

ONLY DAYCOS HAVE THESE 11 OVERWHELMING ADVANTAGES

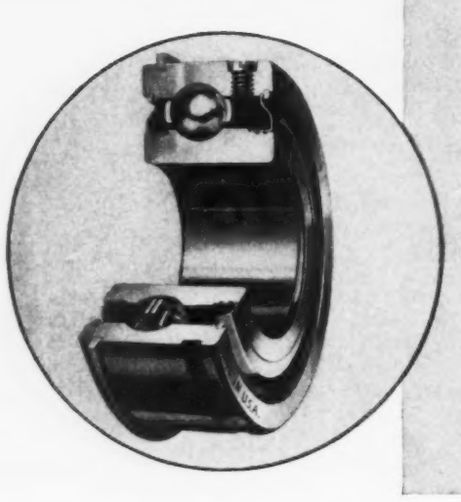
1. Improved drafting.
2. No grooving—less ends down.
3. Not affected by temperature changes.
4. Lower net roll costs.
5. Long service life.
6. Easy to apply.
7. Proper cushioning.
8. Unaffected by hard ends.
9. Static free.
10. Oil resisting.
11. One piece tubular construction.

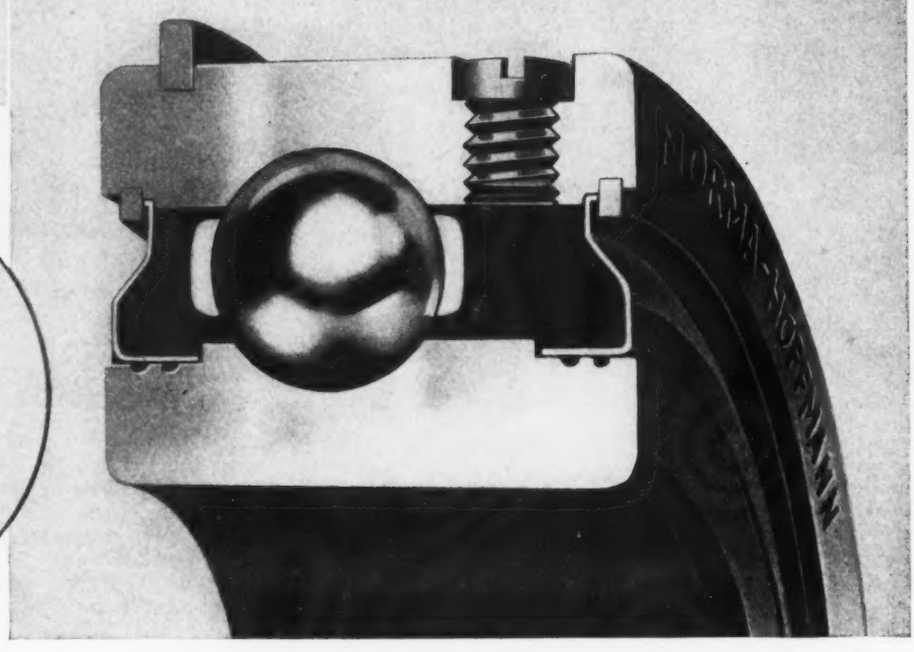
Dayton
Thorobred TEXTILE PRODUCTS
Dayco TEMPERED ROLL COVERINGS-LOOM SUPPLIES
Made by the World's Largest Manufacturer of V-Belts

COPYRIGHT 1940, THE DAYTON RUBBER MFG. CO.



NO *Fear of* GOING DRY!





What water means to the camel, lubricant means to a bearing—LIFE ITSELF. And, like the camel, the "CARTRIDGE" BALL BEARING carries within itself its own EXTRA RESERVE SUPPLY, ample for a long period.

In the cross-section herewith, note how its DOUBLE-ROW WIDTH GIVES THE "CARTRIDGE" BEARING DOUBLE THE GREASE CAPACITY of a single-row type. Note also how the in-built metal seals confine the grease WITHIN THE BEARING ITSELF, providing abundant lubrication to the raceways and rotating elements at all times.

The "CARTRIDGE" BALL BEARING is equipped with close-fitting, wearless metal shields which, with recessed inner ring construction and two or more grease grooves, form a truly effective labyrinth through which THE GREASE CANNOT PASS AND DIRT CANNOT ENTER.

Adopt the "CARTRIDGE" BALL BEARING—as your insurance against neglected lubrication, and dirt and grease contamination. It is handled as an integrally sealed unit, unencumbered by any supplementary closure parts. It provides easier and quicker assembly and disassembly. It stays clean before mounting, during assembly, or when removed, and has convenient regreasing and inspection features. Without additional closures, the "CARTRIDGE" BEARING seal is highly effective regardless of the position of the motor or the unit.

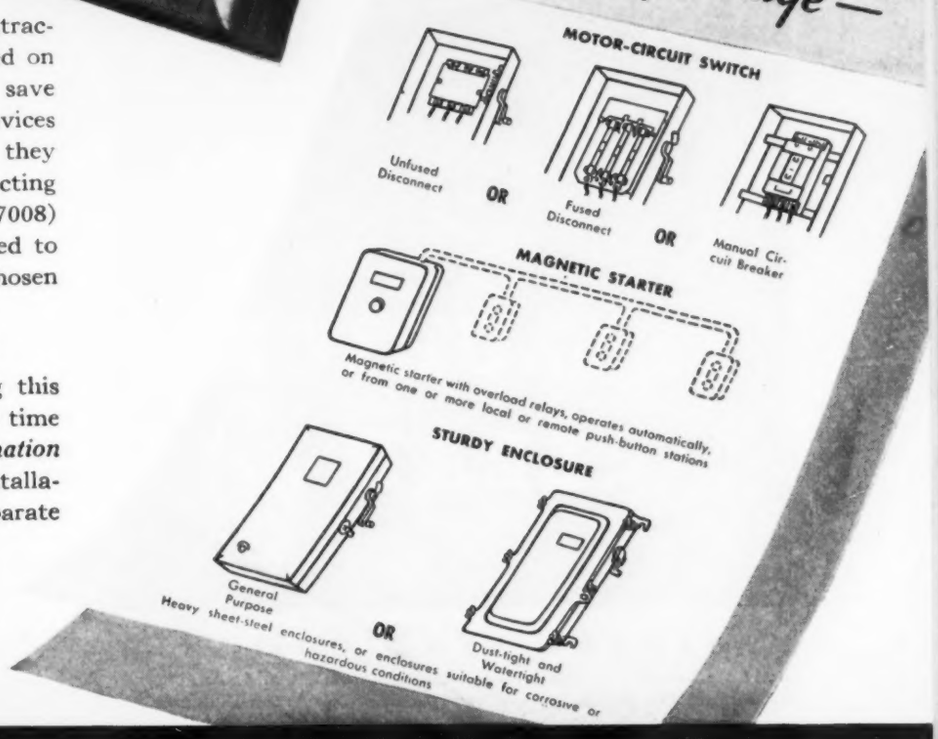
Write for the Catalog. Let our engineers work with you.

NORMA-HOFFMANN BEARINGS CORPORATION, STAMFORD, CONN., U. S. A.

Let us wrap up your control needs with a G-E COMBINATION STARTER

for
Easy Installation
Increased Safety
Improved Appearance
Assured Protection

What we can include in your "package"—



LET us wrap up your motor-control needs in an attractive steel "package" which can be mounted on the wall as a unit *ready to go to work.* It will save you the bother of selecting several separate devices ordering them separately, checking them when they are received, and then mounting and interconnecting them. With the G-E combination starter (CR7008) you can be sure that your entire control is suited to motor-control work—the parts are correctly chosen and assembled.

A SURVEY THAT WILL PAY YOU DIVIDENDS

Don't take our word for the economy of using this starter. Make a survey in your own plant. Next time you install control for a motor, make it a *combination* starter. Keep an accurate record of the cost of installation as compared with the cost of installing separate devices. We'll wager that the CR7008 will save you money—and you'll have a control that gives you four big advantages over separate devices.

General Electric, Schenectady, N. Y.

GENERAL ELECTRIC

676-16

NATIONAL LEAD COMPANY

New York, Baltimore, Buffalo, Chicago, Cleveland, Cincinnati, St. Louis; National-Boston Lead Co., Boston; John T. Lewis & Bros. Co., Philadelphia; National Lead & Oil Co., Pittsburgh; Georgia Lead Works, Atlanta; American Lead Corp., Indianapolis; Master Metals, Inc., Cleveland; The Canada Metal Co., Ltd., Toronto, Montreal, Winnipeg, Vancouver.

CURBS CORROSIVE ACIDS

You know what a curb bit does to an unruly horse—gentles it—helps bring it under control.

Tellurium Lead has the same effect on corrosive acids. From many different industries come user reports telling how this lead has subdued trouble-making acids—reports which state that Tellurium Lead has prolonged the life of equipment, even when the temperature has approached the melting point of the metal.

Another highly important property of Tellurium Lead is this: *It toughens under stress.* When rolled, stretched or hammered, it actually becomes stronger. As a result, turnover points and joints are less subject to cracking. Furthermore, where vibration occurs, this capacity to develop latent strength minimizes buckling and creeping. It also gives Tellurium Lead improved resistance to fracture due to repeated heat changes.

Tellurium Lead of our manufacture is time-tested St. Joe chemical lead alloyed with a small quantity of tellurium. It gives the advantages of this well-known chemical lead plus important new ones. Yet now it costs only a fraction of a cent more per pound than chemical lead. Available in sheets, pipe and coils. For further facts, write our nearest branch.

FOR THE FIRST TIME . . . a Signpost that definitely points to ONE Brand of Belting . . . !

THIS IS A TESTIMONIAL BY **400** MANUFACTURING PLANTS

Some are cotton mills, some flour mills, some metal working plants, and many others. Some of them have the same requirements as your plant. They *all* wanted to get down to bed-rock on the subject of belting costs.

We indicated a method of testing the various brands of belting. They used their own belts, ran the tests themselves, drew their own conclusions. There were 400 altogether—and 96% of them reported more efficient power transmission with Research Leather Belting!

It made us feel we had been over-cautious in guaranteeing only 2% increased production with Research!

Figure All Factors

Figuring in initial cost, belting life, wear on bearings, etc., the facts indicate that in 100% of the cases, you will get lowest unit cost of production with Research Belting!

"The Most Convenient Belting Catalog I've Ever Had"

. . . That's what everybody is saying about Graton & Knight's 1940 Belting Catalog. Information is arranged so you can "get at it" — there are no vague generalities to confuse you. Put this catalog on your desk — and *know* where to get the facts in a hurry! Send coupon today.

Graton & Knight Belting Turns More Pulleys Than Any Other Make in the World!

GET ALL 3 *with Research*

INCREASED MACHINE PRODUCTION

Grinder: 8% more production per hour

Spinning Frame: 15 ft. more yarn an hour with Research Belting

Compressor: Increase in air allowed shutdown of another compressor

Guaranteed to increase average machine production at least 1 or 2%!

•

LOWER MAINTENANCE

Planer Side Heads: 72 hours without stretch; others ran off after 30 minutes

Flour Mill: 72 hours without stretch; best previous 10 hours

Compressor: No attention in 2 years

•

LONGER LIFE

Screw Machine: Special tan belts lasted 3-6 weeks; Research O.K. after 19

1800-lb. Beaters: Research average 8 years; rubber belts 1 year

Card: After 3 years, only 1″ stretch

SEND FOR NEW FREE 1940 CATALOG

Graton & Knight Co., Worcester, Mass.

Please send 1940 Belting Catalog: also other catalogs checked. Spartan Packings ☐ Textile Leathers ☐ Leather Cases, etc. ☐

Name .....

Company .....

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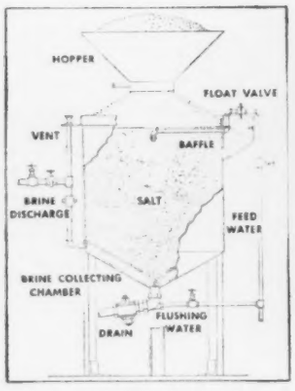
GRATON & KNIGHT COMPANY

WORCESTER GRATON AND KNIGHT MASSACHUSETTS

The main advantage is 4 big savings with many "by-products" in more efficiency



ECONOMY is the main—but not the only—reason why so many textile mills install The Lixate Process For Making Brine. As "by-products" of its automatic operation, there are many contributions to better quality and increased efficiency.

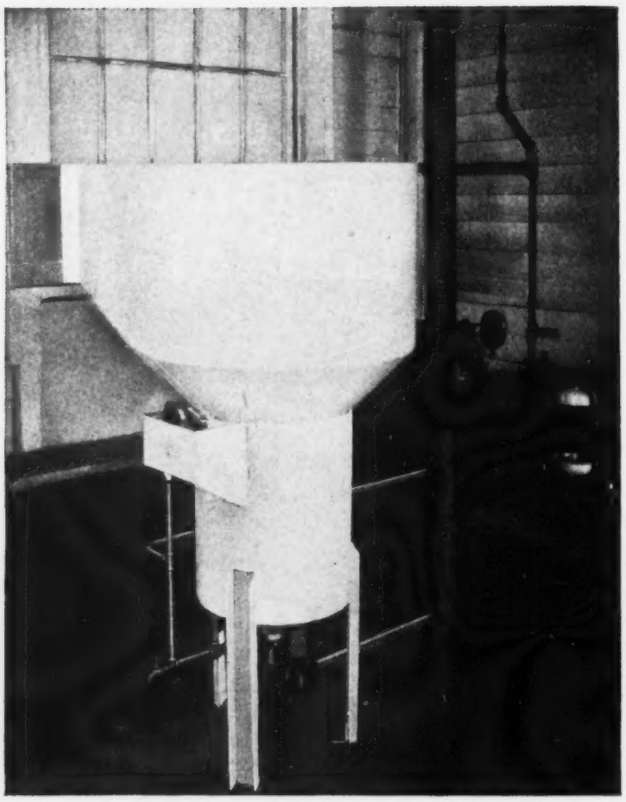
For instance, one dye master believes that the accurate control of the quantity of salt in dyeing solutions, is alone enough to make The Lixate Process a necessity in every well-managed dye house. When salt is added to either closed or open vats in liquid form, there is an immediate and uniform distribution of the salt throughout the solution. This prevents concentrations of the dye exhausting agent—one of the causes of streaking and spotting.

This reduction of uneven dyeing is but one of the minor savings made by The Lixate Process. The four major savings are:

1. Saving in labor cost for handling salt.
2. Elimination of all labor and power costs for mixing brine or mixing salt with dye solutions.
3. Reduction of cost for distributing salt or brine throughout the mill.
4. Savings, estimated by users to be as much as 10% to 20% in the amount of salt required.

The cross section diagram reproduced here, shows how these savings are made possible. You handle salt only once, when the recommended grade of International's Retsof, Detroit or Avery brands of salt is stored in the hopper. Salt flows down by gravity. Water enters through a spray nozzle at the top, dissolves the salt without agitation, and becomes fully saturated brine. This brine is self-filtered, and rises, crystal clear, in a collecting chamber to a discharge pipe. Brine flows to a storage tank from which it can be piped to any part of the plant or mill.

You can see what an advantage it is to have brine always on hand, to be run into dye vats from a tap or hose connection. Yet you make important savings while you are securing this great convenience. Write for The Lixate Book. It tells more about The Lixate Process, with pictures of many installations. It will be mailed on request.



CAROLINA NARROW FABRIC CO., Winston-Salem, N. C.

A convenient Lixate installation for the above company, is illustrated. An important advantage of The Lixate Process is that Lixate Brine can be pumped or piped by gravity to any part of the plant—so that the same brine can be used as an exhausting agent in the dye bath and also for regenerating a zeolite water softener, or any other purpose. Lixate Brine is now being used in dyeing all kinds of fabrics, cotton, wool, silk, rayon, unions and various mixed fabrics.

★ ★ ★

• SALT FOR EVERY PURPOSE

The Lixate Process For Making Brine is a development of International Salt Company, Incorporated, producing all types and grades of salt. Three great mines produce every grade of Rock Salt; and three modern refineries produce every type and grade of granulated salt (vacuum evaporated) and flake salt (grainer evaporated). The advice, counsel, and active cooperation of The Research Department of International Salt Company, Incorporated, are offered freely to those using salt or salt brine in dyeing.

• WRITE FOR THIS BOOK

A copy of The Lixate Book will be sent on request. In addition to describing The Lixate Process in detail and illustrating many installations, this book contains valuable information about uses and properties of salt brine. It may be helpful in producing important economies in your plant or mill operations. Write for it.

The **LIXATE** *Process*
REG. U. S. PAT. OFF.
for making brine

INTERNATIONAL SALT COMPANY, Inc., SCRANTON, PA.

SALES OFFICES: *New York, N. Y. • Buffalo, N. Y. • Philadelphia, Pa. • Boston, Mass. • Baltimore, Md. • Pittsburgh, Pa. • Newark, N. J. • Richmond, Va. New Orleans, La. • Cincinnati, O. • St. Louis, Mo.*
REFINERIES: *Watkins Glen, N. Y. • Ludlowville, N. Y. • Avery Island, La.* • MINES: *Retsof, N. Y. • Detroit, Mich. • Avery Island, La.*

"Efficient production *24 Hours a day* with GULF QUALITY LUBRICANTS"

...SAYS OVERSEER

Actual photograph of a Gulf lubrication engineer on a Periodic Consultation Service call.

"It has paid us to follow this Gulf Engineer's recommendations for shell rolls and roll necks of these long draft slubbers."

"OUR modern equipment is making a fine production record with Gulf's higher quality lubricants," says this Overseer. "And our maintenance costs are very low! GULF PERIODIC CONSULTATION SERVICE has brought us real benefits."

This large mill, like many others, has found that the use of Gulf's higher quality lubricants is real economy. Lower maintenance expense, improved production, and lower power bills are some of the benefits you can expect from the proper use of these finer lubricants.

The services of a Gulf engineer and Gulf's line of more than 400 quality oils and greases are quickly available to you through 1100 warehouses located in 30 states from Maine to New Mexico. Write or phone your nearest Gulf office today.

this booklet will suggest to you a practical method by which you can improve production and reduce operating costs. Write for your free copy.

GULF INDUSTRIAL LUBRICATION

Gulf Oil Corporation - Gulf Refining Company
3813 Gulf Building, Pittsburgh, Pa. T.W.

Please send me my copy—no charge—of the booklet "GULF PERIODIC CONSULTATION SERVICE."

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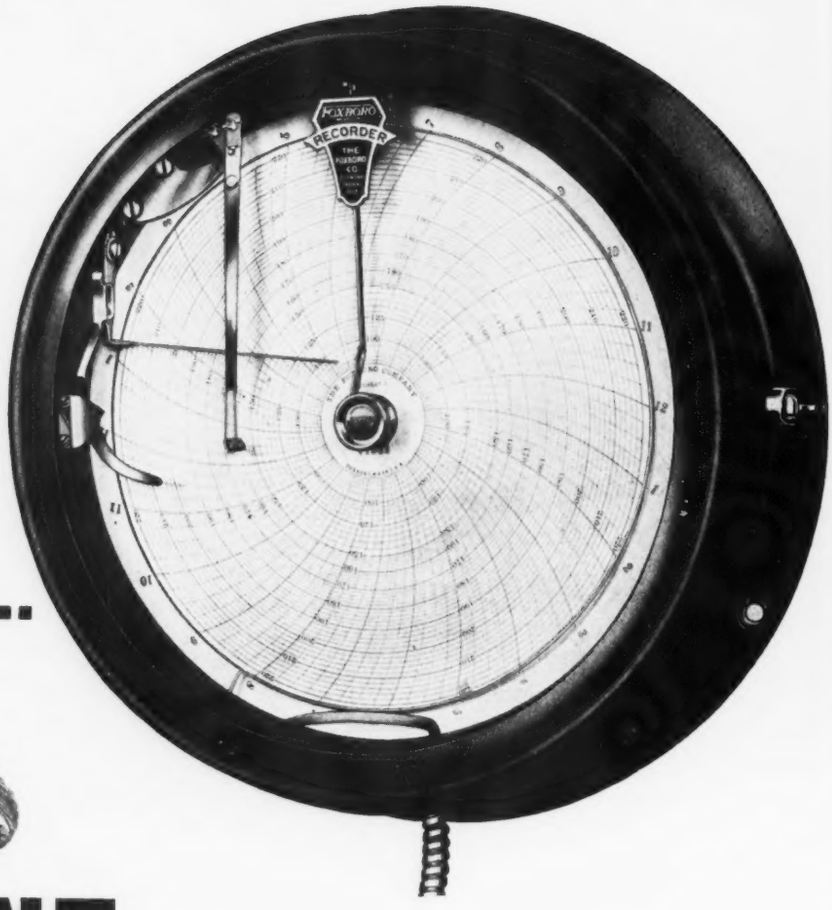


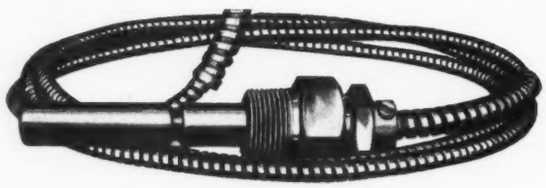
4 types... 700 chart ranges...

BUT ONLY ONE ACCURACY STANDARD!

No matter what type of service or results you require from a temperature recorder, there's no need to forego the speedy response, high sensitivity and accuracy of a Foxboro Recording Thermometer.

Every temperature range from —150° F. to 1000° F. is competently handled by one of the four different types of Foxboro Recorders . . . Liquid Pressure, Vapor Pressure, Gas Pressure or "Anti-Ambi" Liquid Pressure type. Graphic records that are as accurate as the instrument mechanisms themselves, are made possible by a selection of 700 precision-printed-and-pierced charts to meet any operating conditions.

Throughout this wide option of individual Foxboro Recording Thermometers – in fact, in *all* instruments



made by Foxboro – there is one unvarying characteristic. *Accuracy* – of design, mechanical construction and practical performance – this is the factor that has given Foxboro an enviable reputation wherever instruments are used.

Write for reference bulletin on Recording Thermometers. **The Foxboro Company, 84 Neponset Ave., Foxboro, Mass., U. S. A.** Branches in 25 Principal Cities.

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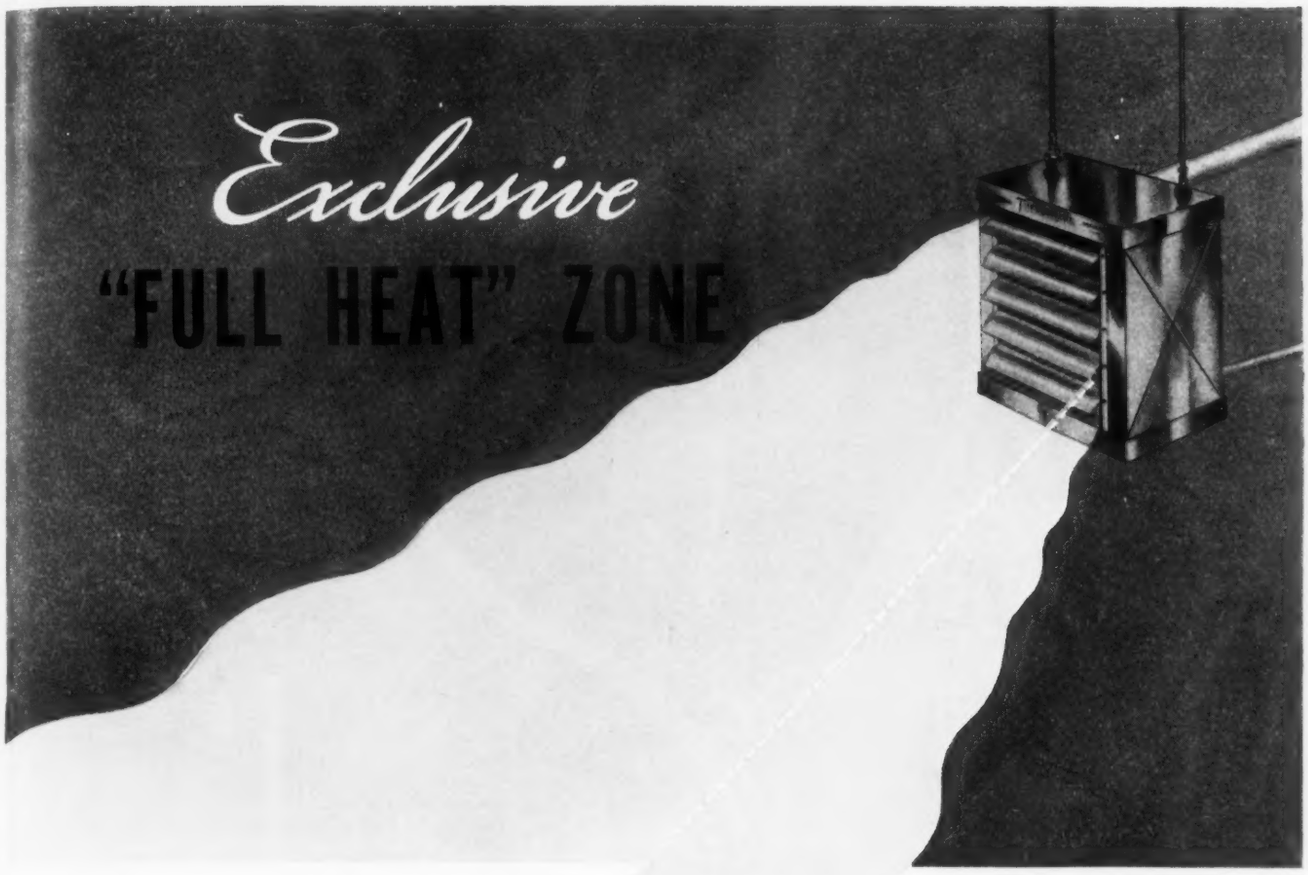


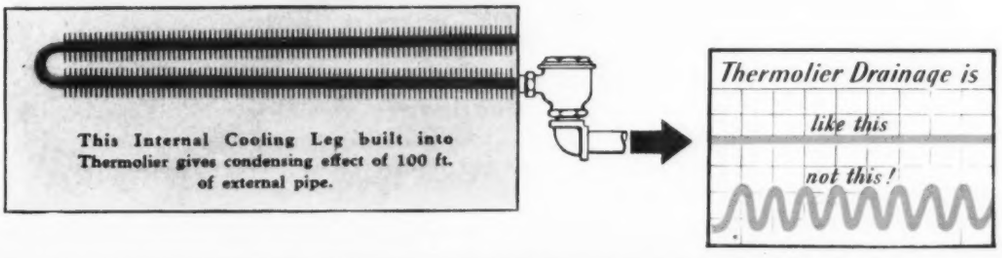
. . . typifies Thermolier's advanced design!

There's one quick way to tell which unit heater is engineered to give maximum *overall* economy. Find out which one produces continuous "full heat" from all radiating surfaces, in *actual performance,* as well as standard rating tests!

Only Thermolier has the exclusive Internal Cooling Leg that insures *continuous* drainage of condensate . . . *continuous* live-steam radiation from all surfaces. It eliminates intermittent drainage cycles that cause temperature variations and losses in heating efficiency in as much as 1/3 of the heating surface.

This is but one example of original Thermolier features that provide cost-cutting simplicity of installation, fuel-savings up to 27%, and lower maintenance costs. Others include expansion-compensating U-tubes and the same tube-to-header construction used in condensers.

Write for complete Data Book on Thermolier . . . the unit heater so efficiently designed that it has required no changes since its original development! Available in 37 types and sizes. Grinnell Co., Inc., Executive Offices, Providence, Rhode Island. Branch offices in principal cities of the United States and Canada.


This Internal Cooling Leg built into Thermolier gives condensing effect of 100 ft. of external pipe.
Thermolier Drainage is
like this
not this!

GRINNELL THERMOLIER

THE UNIT HEATER WITH 14 POINTS OF SUPERIORITY

From the achievement files of "American" Drive Selection Service

EXISTING EQUIPMENT *converted to an* IDEAL DRIVE! IN ONE EASY STEP ★

The Boott Mills at Lowell, Massachusetts, have a regular modernization program. They wanted to increase the efficiency of roving frames to a level equal to the most modern equipment.

This is exactly what was accomplished for them by "American" Drive Selection Service—simply by installing Tension-Control Motor Bases.

The results: Production increased. Quality improved. Maintenance attention reduced. The need for costly, delayed-type starters and clutches was eliminated by the use of flat belts and tight and loose pulleys. This facilitated "inching" and operators like the drive because it simplifies and speeds their work.

Another result: Boott Mills have adopted "American" Tension-Control Flat Belt Drives as standard for such equipment.

For results like this in *your* plant—whatever the nature of your transmission problems—call on "American" Drive Selection Service. Write us, describing the conditions you want to overcome—and rest assured of an unbiased recommendation based on years of practical experience.

AMERICAN
Drive Selection Service

AMERICAN
PULLEY COMPANY
4250 Wissahickon Ave., Phila., Pa.

It happened in Donlea's . . .

Customer: Miss Kare, remember this rayon dress I bought last week? You told me it is washable.

Saleslady: It *is* washable, Mrs. Fuller. Why, what happened?

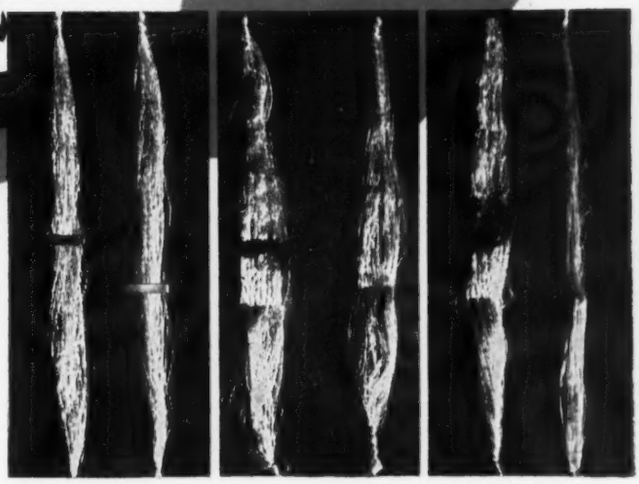
Customer: See, all these threads pulled apart. You can tell the dress wasn't snagged. It looks to me as though the material was defective originally.

Saleslady: I'm so sorry. It certainly hasn't been snagged. I'll take it up with the buyer today. Something must be wrong with the material.

• Something *was* wrong with the material. When excessive tendering is caused by tiny particles of iron from reels, shafting and other equipment, embarrassing situations like this may develop. Use equipment made of ARMCO Stainless Steels to eliminate this serious cause of tendering.

Rustless and durable as it is, ARMCO Stainless staunchly resists the corrosive attack of processing chemicals and prevents iron pickup by the fiber. You get fast dye changes without boilouts, colors stay faithful, and the service life of equipment is lengthened.

Ask us or your equipment fabricator to show you how ARMCO Stainless can help you produce better, more uniform textiles at lower cost. Write The American Rolling Mill Co., 2411 Curtis St., Middletown, O.



A B C

(A) Twin strands of rayon yarn ready for the metallic iron test, with an iron clip at the left, an ARMCO Stainless clip at the right. **(B)** Clips are removed after exposure to damp air for six days. Note difference in the yarn. **(C)** After strength test. At exact point of contact with the iron clip the strand snapped at 4¾ lb. tension. Yarn at right (clipped with stainless steel) withstood 23 pounds without breaking.

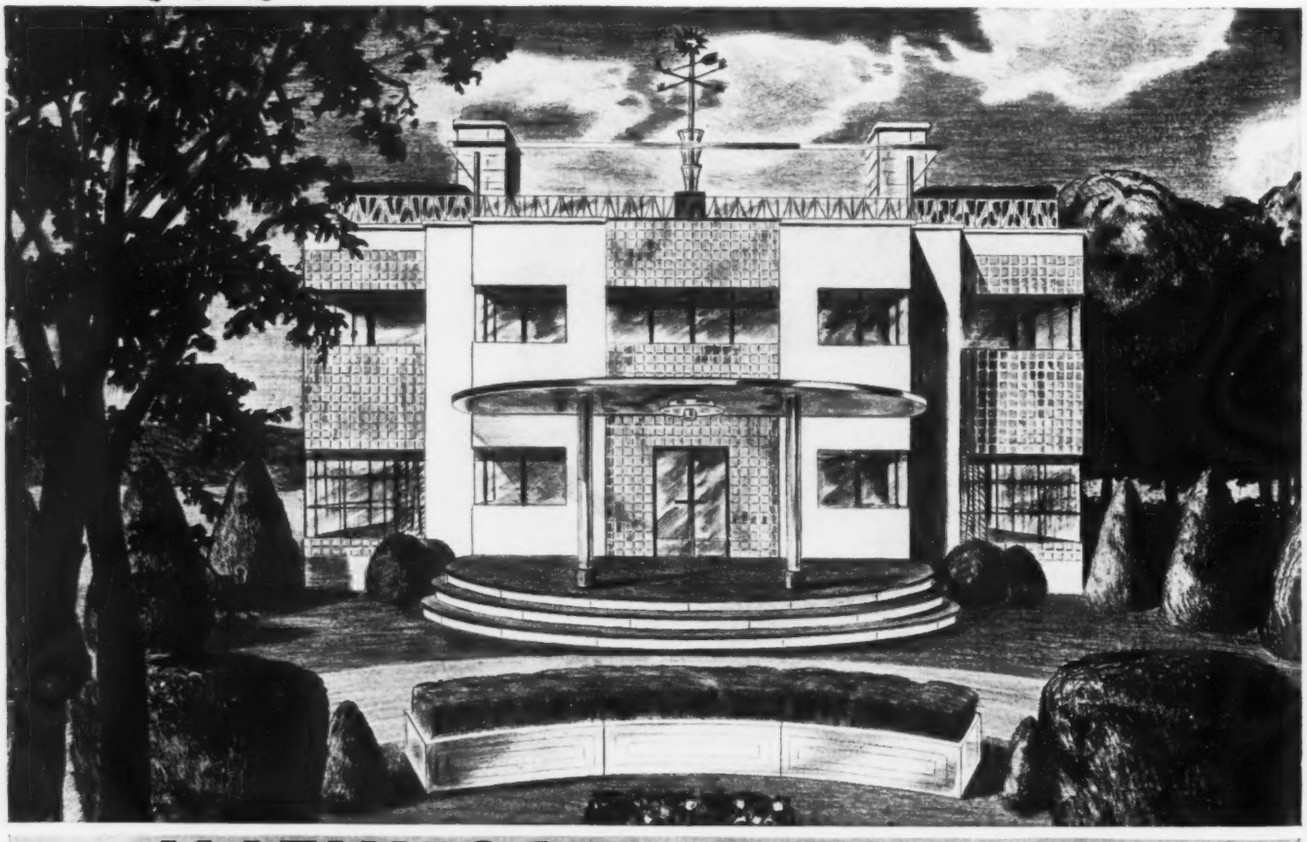
ARMCO Stainless Steels

"WHAT! GLASS HOUSES?"

Suppose some one who lived forty or fifty years ago—say one of the founders of Mathieson—could pay us a visit today. And suppose we could have the pleasure of showing him the sights of 1940, of explaining the vast changes that have taken place since the turn of the century. What do you think would amaze the old gentleman most? If he were one of the pioneers who founded Mathieson, we believe he would be most interested in the revolutionary changes wrought by chemical progress and in the part his successors have played in building the present-day America. We would go about telling him the story as we tell it in this series of advertisements.

● Yes, Mr. M., nowadays we have houses in which glass plays a large part both in construction and decoration. Glass brick represents only one of the new ways in which the modern world utilizes glass. We use glass insulation in our homes, too. Modern decorators are producing beautiful interiors through the use of glass in decoration. Safety glass is a modern idea; our automobiles ("horseless carriages" to you, old friend) are now equipped with this cleverly constructed, shatterproof glass. The manufacture of plate glass, the last word in modernity in your day, has undergone great changes, together with window glass and glass containers of every description. And last but not least, beautiful fabrics made from spun glass are now available for a variety of purposes.

Your successors at Mathieson are proud of their part in the growth of the great modern glass industry. They have continued to pioneer, seeking improvements in the production and distribution of Mathieson Chemicals — products whose purity and uniformity are so highly valued by leading glassmakers and other important consumers of industrial chemicals.



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